611 Broadway Suite 907G

New York, New York 10012 Geologic Boring Log Watery Oil Separator SWMU 43 Location Project: Client: Boring ID Yabucoa, Puerto Rico **RCRA Facility Investigation** Puerto Rico Sun Oil Company 43-03 **Drilling Contractor** Driller AMAI Geologist/Engineer Project No. Jaca & Sierra Néstor M. Rivera Mario Sierra Sampler type Date Completed **Drilling Method** Date Started 2"x 24" Carbon Steel Split Spoon 6/26/96 Tripod 6/26/96 Soil Description PID Reco-Blow Depth Description made from auger cuttings, unless otherwise noted. **Counts USCS** very (ppm) bgi (grain size, sorting, moisture, color/hue etc.) (per 6") (per 24") (ft.) Symbol 0-2 ft. Sand. Poorly sorted, loose, slightly moist, light brown (7.5YR6/3) to light 3-6-7-8 1 0 SP yellowish brown (10YR6/4). Sand composed of quartz, mica, pyrite, shell and lithic fragments varying in size from fine to coarse. 1 Full analysis and Immunoassay samples collected. Sample collected 0 immunoassay sample collected. 4 2 SP light yellowish brown (10YR6/4). Sand composed of quartz, mica, pyrite, shell 5 and lithic fragments varying in size from fine to coarse. Sample collected 6 3 Full analysis, physiochemical and Immunoassay samples collected. SP 18 4-7-9 0 3.5-5 ft. Sand. Poorly sorted, loose, slightly moist, light brown (7.5YR6/3) to 4 Immunoassay sample collected. and lithic fragments varying in size from fine to coarse. 0 SP 12 5-6-5 5 5-6.5 ft. Sand. Poorly sorted, loose, slightly moist to wet, dark grey (Gley 1 brown (10YR6/4). Sand composed of quartz, mica, pyrite, shell and lithic 6 fragments varying in size from fine to coarse. 4-5-6 12 SP 6.5-8 ft. Sand to silty sand. Poorly sorted, loose, moist to saturated, dark 7 Sample collected brown (7.5YR3/3) to black (Gley 1, 2.5/N). Sand composed of quartz, mica, 8

pyrite, shell and lithic fragments varying in size from fine to coarse. Full analysis, physiochemical and Immunoassay samples collected.

Boring terminated.

					Soil Descriptions*			
	Size (mm)	)	Gravel	Sym		Silt & Clay	Sym	
Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic .
		4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
			some fines			low plast.	CL	gravelly,sandy,silty clay
					sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous
						high plast.	СН	high plasticity clay
<del></del>				sw	well graded gravelly			Organic
-	<del></del>			-		low plast.	OL	silty clay low plasticity
<u> </u>	<u> </u>			-		high plast.	ОН	clay med. to high plasticity
						Peat	PT	humus,swamp soils, organic
	19-75 2.0-4.8 very loose dense very ang. sub round	Coarse Medium  19-75  2.0-4.8  43-2.0  very loose loose dense very dens very ang. angular sub round rounded	Coarse   Medium   Fine     19-75     4.8-19     2.0-4.8   4.3-2.0   .08043     <.08     very loose   loose   med. dense   dense   very dense   very ang.   angular   sub angular	Coarse Medium Fine no fines  19-75 4.8-19 little fines 2.0-4.8 .43-2.0 .08043 some fines	Coarse Medium Fine no fines GW  19-75 4.8-19 little fines GP  2.0-4.8 43-2.0 .08043 some fines GM <a href="#">COB</a> <a href="#">COB</a> <a href="#">Very loose loose med. dense</a> <a href="#">Very dense</a> <a href="#">No fines</a> <a href="#">SW</a> <a href="#">Very ang.</a> <a href="#">angular sub angular sub angular sub round rounded well round some fines</a> <a href="#">SM</a>	Coarse Medium Fine no fines GW well graded gravel  19-75 4.8-19 little fines GP poorly graded gravel  2.0-4.8 .43-2.0 .08043 some fines GM sand,silt,gravel mix  <.08 some fines GC sand,clay,gravel,mix  very loose loose med. dense Sand  dense very dense no fines SW well graded gravelly very ang. angular sub angular little fines SP poorly graded gravelly sub round rounded well round some fines SM silty-sand sandy-silt	Size (mm)   Gravel   Sym   Silt & Clay	Size (mm)   Gravel   Sym   Silt & Clay   Sym

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## Geologic Boring Log

Watery Oil Separator SWMU 43

oring ID		Client:			Proj	ject:			ocation
43-0			co Sun Oi	l Compan	•	RA Facility Investiga	tion		/abucoa, Puerto Rico
roject No.			logist/Engin		Drill	ler	- 32 - 3 - 3	_	orilling Contractor
•		Néstor M	. Rivera			rio Sierra	- 2 2		aca & Sierra
ate Started		Date Comp	leted	36		ling Method			ampler type
6/26/96		6/26/96			Trip	pod	0 11 15		"x 24" Carbon Steel Split Spoo
Depth		Reco-	Blow	PID			Soil Desc	_	
bgl	USCS	very	Counts	(ppm)					nless otherwise noted.
(ft.)	Symbol	(per 24*)	(per 6")				ize, sorting, mo		
0	SM, SP	18	10-9	1	0-2 ft. Sa	andy silt to silty sand	to sand. Poo	orly so	rted, loose to soft, slightly
	Sample C	ollected	11-10	- 1	moist, ve	ery dark brown (10YF	32/2) to dark	gray (	2.5Y4/1). Sand composed
1					of quartz	z, mica, pyrite, shell a	nd lithic frag	ments	varying in size from
	Sample C	ollected			fine to co	oarse. Hydrocarbon o	dor.		
2	SM	12	6-6-9	2	lmmuno	assay sample collecte	:d.		
-					2-3.5 ft.	Sand. Poorly sorted,	loose to soft	, sligh	tly moist, dark gray
3	Sample (	ollected		- 1	(2.5Y4/1	). Sand composed of	f quartz, mica	ı, pyrit	te, shell and lithic fragments
3	SM	18	9-9-11			in size from fine to co			
4	2141					assay sample collecte			
4					1111				
	SP	10	5-7-5	0	5-6.5 ft	Gravelly sand. Poorly	y sorted, loos	e, slig	htly moist to wet, dark gray
5	or	10	3-7-5	ا ٽا	(2 5VA/1	1) Sand composed of	f quartz, mic	a, pvri	te, shell, coral and lithic
,						ts varying in size from			,,
6			224		( 5 0 A	Sand to silty sand. Po	oorly sorted	loose	saturated dark grav
	SM	18	3-3-4	0	0.5-0 IL	1). Sand composed of	founds mic	nvri	te shell and lithic
				100	K2.5 Y 4/ J	ii. Sang composed of	i quartz, iiiici	a, pyri	ic, shell, and henc
7			1 1						mined Poots observed
7			1		fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
7 8					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
	i a				fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
	<b>C</b>				fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragment	ts varying in size fror	n fine to med	lium g	rained. Roots observed.
	O				fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragmen	ts varying in size from	n fine to med	lium g	rained. Roots observed.
					fragment	ts varying in size from	n fine to med	lium g	rained. Roots observed.
8		Siza / mem			Boring t	ts varying in size from	Silt & Clay	Sym S	rained. Roots observed.
	Correct	Size (mm)		Gravel	Boring t	ts varying in size from	n fine to med	lium g	Inorganic
Туре	Coarse	Size (mm)	Fine	Gravel no fines	Boring t	ts varying in size from	n fine to med	lium g	rained. Roots observed.
Type	19-75	Medium	Fine 4.8-19	Gravel no fines little fines	Boring t  So Sym GW wel GP poo	ts varying in size from	Silt & Clay	Sym	Inorganic
Type  Gravel	19-75 2.0-4.8		Fine 4,8-19 .08043	Gravel no fines little fines some fines	Boring t  So Sym GW wel GP poor	ts varying in size from	Silt & Clay low plast	Sym ML	Inorganic silts and very fine sand
Type  Fravel Sand Silt & clay	19-75 2.0-4 8	Medium .43-2.0	Fine 4,8-19 .08043 <.08	Gravel no fines little fines some fines	Boring t  So Sym GW wel GP poor	ts varying in size from	Silt & Clay low plast. high plast.	Sym Sym CL CL MH	Inorganic silts and very fine sand gravelly, sandy, silty clay micaccous/diatomaccous
Type  Gravel Sand Silt & clay	19-75 2.0-4.8	.43-2.0	Fine 4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines some fines Sand	Boring t  So Sym GW wel GP poo GM san GC san	ts varying in size from	Silt & Clay low plast	Sym ML CL	Inorganic silts and very fine sand gravelly, sandy, silty clay micaceous/diatomaceous high plasticity clay
Type  Fravel Sand Silt & clay	19-75 2.0-4 8	Medium .43-2.0	4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines Sand no fines	Boring t  So Sym GW wel GP poo GM san GC san	ts varying in size from terminated  Dil Descriptions*  Il graded gravel orly graded gravely	Silt & Clay low plast low plast high plast.	Sym ML CL MH	Inorganic silts and very fine sand gravelly, sandy, silty clay micaceous/diatomaceous high plasticity clay Organic
Type  Oravel Sand Silt & clay Soil density	19-75 2.0-4 8 very loose	.43-2.0	Fine 4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines Sand no fines	Boring t  So Sym GW wel GP poo GM san GC san SW wel SP poo	ts varying in size from terminated  Dil Descriptions*  Il graded gravel orly graded gravel id, silt, gravel mix id, clay, gravel, mix  Il graded gravelly orly graded gravelly	Silt & Clay low plast. low plast. high plast. high plast.	Sym ML CL MH CH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity
8	19-75 2.0-4.8 very loose dense	.43-2.0 loose very dense	4.8-19 .08043 <.08 med. dense	Gravel no fines little fines some fines some fines little fines	Boring to Sym  GW wel  GP pool  GM san  GC san  SW wel  SP pool  SM silt	ts varying in size from terminated  Dil Descriptions*  Il graded gravel orly graded gravely	Silt & Clay low plast low plast high plast.	Sym ML CL MH	Inorganic silts and very fine sand gravelly, sandy, silty clay micaceous/diatomaceous high plasticity clay Organic

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## Geologic Boring Log

Watery Oil	Separator	<b>SWMU</b>	43
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								Watery Oil Separator SWMU 43	
oring ID		Client:			Project:			ocation	
WO		Puerto R	ico Sun O	il Co.	RCRA Facility Invest	igation		Yabucoa, Puerto Rico	
roject No		AMAI Ge	ologist/Eng	ineer	Driller			Orilling Contractor	
_		Gustavo	Felipe		Constancio Olivo			laca & Sierra	
ate Start	led	Date Com			Drilling Method			Sampler type	
/8/96		8/8/96			Tripod		2	2"x 24" Carbon Steel Split Spoon	
Depth		Reco-	Blow	PID					
bgl	USCS	very	Counts	(ppm)		Soil Description (grain size, sorting, moisture, color/hue etc.)			
(ft.)	Symbol	(per 24")	(6" each)	***********					
Ö	SM	24"	5-6-6-7	0.0	0-2 ft Top of spoon (17") fi	ne sand an	d silt, or	ganic soil layer, some rock	
					fragments				
		1	- 22		Bottom of spoon (7") Med	on (7") Med to fine sand bands of gray silt, no rock fragments no coarse sand, no visible contamination, Dry,			
1					or large gravel, no coarse sa				
					Hue 10 YR 6/2 light brown	ish gray.			
2	SM	24"	13-14	0.0	2-4 ft Same as above, no vi	s above, no visible contamination, moist at bottom of sporite and mica, Hue 10 YR 6/4 light yellowish brown.			
	ļ	ነ	15-16		Abundant pyrite and mica,				
3		į.	1						
ļ		1			ţ				
			l .			_	_	n	
4	SM	19"	14-18	0.0	4-6 ft Fine sand and silt fin	er than abo	ve, Ban	ds of gray to black silt,	
			15-16	l	Tip of spoon is gray micac	of spoon is gray micaceous silt, no visible contamination, Dry throughou			
			1		Hue 10 YR 6/4 light yello	wish browi	n		
5		1							
	1		l	1					
			ĺ					to a state of the same course cond	
6	ML	15"	8-4-5-4	0.0	6-8 ft Top of spoon (4") si	It and fine	sand, ab	undant mica, little or no coarse sand	
	OL		1		Middle of spoon (1") clay	and silt gra	y low pi	asticity inorganic clay	
	<b>!</b>	Ì			Bottom of spoon (10 ") Bla	ack silty pe	at organ	ic soil, trace roots and organic debris,	
7	PT	1		1	No visible contamination.	10p - Hue	Dlook	11 101 giey 4/2 dark gray.	
- 1		▼	<u> </u>	1	Bottom - Hue chart #1 for	gley 2.5 IN	DIACK		
							abss	ndent mice	
	ML	12"	8-4-6-2	0.0	8-10 ft Silt and fine sand,	same as ao	ove, aou	ndant mica.	
	1		ì						
<b>\rightarrow</b>	1	1	1	1	D III . 10 0 and install to		onitorin	g well point, Screen interval	
10			1	1	•	inporary in	OHIOH	s won pound out out and a	
	1			1	6-10 ft bgl End boring				
	<u> </u>		1	<u> </u>	Well Construct	ion Detail			
			la -	4.2		Filter Pack		Cap Type	
Casing m			Screen sl		TOCICED INTELLAN	No. 2 Silic	a sand	Watertight	
Schedule 40 PVC									
-	casing/m	anbole:			None				
None			<u>-</u>		HAONE				
Notes:								.1	
					Well Develop	ment Data	<del></del>		
					well Develop	IIICUI DATA	Volume	nurved:	
Date:		Techniq	De:		100 high donain anhachada	ne hose	4 OTHILLE	5 gallons	
8/	/8/96				/8" high density polyethyler	SC - speci	fic cond		
	Ter	mp (°C)	SC (	μS/cm)	<del></del>	oc - speci.	TO COULT		
Initial:	<del>                                     </del>	25	1-		<del></del>				
Final:		25						Prepared 6/11/97	

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### Geologic Boring Log

			Geo	Geologic Boring Log			Ballast Basin Skimmer Area SWMU 44			
oring ID		Client:		<del></del>		Project:		_	Location	
44-0			co Sun Oil						Yabucoa, Puerto Rico	
roject No.			logist/Engine	ег		Driller	Drilling Contractor			
		Joseph Ly				Mario Sierra			Jaca & Sierra	
ate Started		Date Comp	leted			Drilling Method		Sample	er type 4" Carbon Steel Split Spoon	
/21/96		6/21/96	Т			Tripod	Soil Desc			
Depth		Reco-	Blow	PID		<b>-</b>		-	mless otherwise noted	
bgl	USCS	very	Counts	(ppm)						
(ft.)	Symbol	(per 24°)	(per 6")		<u> </u>		ize, sorting, mo			
0	-	-	- 1			Sand and silt mix, loose			me to coarse gram	
			1		No vi	sible contamination, no	product odo	15, 		
		1			Quatr	z, mica, pyrite, and lithic	c sand rive:	Cark C	h	
1						m of spoon Hue: 2.5 Y				
	Sample c	ollected			Full a	nalysis and Immunoassa	ay samples o	onecu	ea	
2	-	-	-			Sand, same as above	_			
				28	Full a	nalysis and Immunoassa	ay samples o	collecte	ed	
		[ <b>[</b>								
3	Sample c	ollected	]		End t	oring				
				i						
4										
		1								
		l i								
5			ļ							
		<u> </u>								
6	1									
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	]									
				'	1					
							7.0			
	1	1								
	1									
		<u> </u>	<u> </u>	<u></u> .	- 6	oil Descriptions*				
	,			a .			Silt & Clay	Sym		
Туре	<del> </del>	Size (mm)		Gravel	Sym		Sin a Clay	Lal m	Inorgânic	
	Coarse	Medium	Fine	no fines	GW	well graded gravel	low plast.	ML	silts and very fine sand	
Gravel	19-75	NO.	4.8-19	little fines	GP	poort) grade grade		CL	gravelly, sandy, silty clay	
Sand	2.0-4.8	43-2.0	.08043	some fines	-		low plast.	MH	micaceous/diatomaceous	
Silt & clay				some fines	GC		high plast.	_	high plasticity clay	
Soil density	very loose	loose	med_dense	Sand	L		high plast	сн		
**	dense	very dense		no fines	SW	well graded gravelly		le:	Organic	
	very ang.	angular	sub angular	little fines	SP	poort, grant grant,	low plast.	OL	silty clay low plasticity	
Angularity :					1 014	1 16 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	high plast.	ОН	clay med, to high plasticity	
Angularity	sub round	rounded	well round	some fines	SM		Peat	PT	humus, swamp soils, organic	

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# Geologic Boring Log

									Skimmer Area SWMU 44	
Boring LD		Client:		_		Project:	tion	_	Yabucoa, Puerto Rico	
44-0	_		co Sun Oil			RCRA Facility Investiga	ition		Prilling Contractor	
roject No.			logist/Engine	er	Mario Sierra Jaca & Sierra					
		Joseph Ly			Drilling Method Sampler type					
ate Started		Date Comp	leted			Tripod			I" Carbon Steel Split Spoon	
/20/96		6/20/96		DID I		Tripod	Soil Descr			
Depth		Reco-	Blow	PID				-		
bgl	USCS	very	Counts	(ppm)					nless otherwise noted	
(ft.)	Symbol	(per 24")	(per 6")				ze, sorting, mois			
0	T - [		-			Sand and silt mix, loose			ine to coarse grain	
	Sample co	ollected			No visible contamination, no product odor, Quatrz, mica, pyrite, and lithic sand Hue: dark brown 7.5 YR 3/2					
			į	1	Quatr	z, mica, pyrite, and lithic	c sand Hue: o	dark b	rown 7.5 YR 3/2	
1	1				Bottom of spoon Hue: 2.5 Y 5/3 light yellowish brown					
-		l			Immu	noassay samples collect	ed.			
	] ]	- 1		- 1		•				
2	1 [	_	_	. 1	2-4 ft	Sand, fine to coarse, sor	me silt, trace	clay,		
2	-	Ĭ.	1		No vi	sible contamination, abu	ındant guartz	mic	a, pyrite, and lithic sand.	
	1 1	ı			Live 7	2.5 Y 5/3 light yellowish	brown Imm	ามทอลร	ssay sample collected.	
	<u> </u>		ļ	1	riue 2	1 3/3 light yollowish	010 *****		,	
3	Sample c	ollected			E-11	oring.				
					Ena c	ooring				
	!	1								
4	1		ļ	1						
			1							
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6	<b>,</b>		ļ		1	4.0				
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	Ĭ		1							
	1				1					
			1							
		1								
					1					
				<u> </u>	S	oil Descriptions*				
	т —	C! ()		Gravel	Sym		Silt & Clay	Sym		
Type	<del> </del>	Size (mm)			GW	well graded gravel			Inorganic	
	Coarse		Fine	no fines	<del>-</del>		low plast.	ML	silts and very fine sand	
Gravel	19-75	新教法	4.8-19	little fines	GP			CL	gravelly, sandy, silty clay	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM		low plast.		micaceous/diatomaceous	
		数源系	<.08	some fines	GC		high plast.	мн		
Silt & clay		loose	med dense	Sand		<u> </u>	high plast.	СН	high plasticity clay	
Silt & clay Soil density	very loose	,0000			sw	I ill and a second line			Organic	
	very loose dense	very dense		no fines	3 W	well graded gravelly				
Soil density	dense	very dense	sub angular	no fines little fines	+		low plast	OL	silty clay low plasticity	
	<del></del>				SP	poorly graded gravelly	low plast high plast	OH OH		

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## Geologic Boring Log

							Ballast		Skimmer Area SWMU 44	
oring ID		Client:			P	roject:		_	ocation Disc	
44-0			o Sun Oil	Company	PROBA Facility Investigation Yabucoa, Puerto Rico					
oject No.			ogist/Enginee		D	riller			rilling Contractor	
oject	J	oseph Ly	sonski		-	lario Sieπa			aca & Sierra	
ate Started		ate Compl				rilling Method		Samples	rype "Carbon Steel Split Spoon	
21/96		6/21/96			<u>T</u>	ripod				
Depth		Reco-	Blow	PID			Soil Descr			
bgl	USCS	very	Counts	(ppm)	Descriptions made from auger cuttings, unless otherwise (grain size, sorting, moisture, color/hue etc.)					
(ft.)	Symbol	(per 24")	(per 6")							
0	SM		2-3-11-16		0-2 ft	Sand and silt mix, loos	e, slightly mo	oist, Fi	ne to coarse grain	
•	Sample co		i		No visible contamination, no produ				rz, mica, pyrite, and lithic	
	Sample co	7.100.00		1	sand. I	lue: dark brown 7.5 Y	y sample collected.			
1	1	- 1	1		Botton	n of spoon Hue: 2.5 Y	5/3 light yello	owish l	brown	
1	l l					•				
	Ì I	ļ								
_		12	10-11-13		2-3.51	it Sand, same as above	·.			
2	SP		10-11-13	l		noassay sample collec				
	Sample c	ollected		l	Піпіп	mousey sample serve				
			1	1						
3	Sample c				255	E & Cand Englisher	se ahundant o	martz :	sand, mica, pyrite, and lithic	
	SP	20	11-12		J.5-5.:	ents, No visible contar	nination eligi	ativ ma	nist loose.	
		- 1	14-14		tragm	ents, no visible contai	Illiation, singi	1117 1111	5156, 15-55.	
4	\ \ \			ļ	Hue	7.5 Y 5/3 light olive br	own lee e	allasta	A (8/7/96)	
				i	Full a	nalysis and Immunoas	say samples c	onecie	Divers (TRD semple)	
	1				8/1/96	Step-out boring con	tinued by Ne	STOL IA	I. Rivera (TBD sample)	
5							•			
	SP	20	10-10		5.5-7.	5 ft Same as above M	oist to wet		1.0011.000	
			10-10		Full a	nalysis and Immunoas	say samples c	ollecte	ed (8/1/96)	
6		]								
•	Sample o	ollected		Į.						
	-									
7		1 1								
,	SP	11	7-9-9-6		7.5-9.	5 ft Sand, fine to coars	se, abundant q	juartz,	mica pyrite, and lithic sand	
	) "	₩			No vi	sible contamination, S	aturated			
•		V .				f spoon (4") Hue: 2.5		ive bro	own	
8	1				Botto	m of spoon (7") Hue:	chart 1 for gle	y 4/1 :	5BG)	
						ndwater 7.5 ft		•	•	
	-	<b>\</b>			ı	oring				
9					Ena c	ornig				
22					ļ					
				<u> </u>	<del></del>	oil Descriptions*				
				Gravel	Sym		Silt & Clay	Sym	:	
Туре		Size (mm)				well graded gravel			Inorganic	
	Coarse		Fine	no fines	1	poorly graded gravel	low plast.	ML	silts and very fine sand	
Gravel	19-75		4.8-19	little fines	_	7.5	low plast.	CL	gravelly, sandy, silty clay	
Sand	2.0-4.8	43-2.0	.08043	some fines	1	sand, silt, gravel mix	high plast.	MH	micaceous/diatomaceous	
Silt & clay		क्रिक्स	<.08	some fines	GC	sand,clay,gravel,mix		СН	high plasticity clay	
Soil density	very loose	loose	med dense	Sand	↓		high plast.	Сп		
	dense	very dense		no fines	sw	well graded gravelly	<del>                                     </del>	To:	Organic silty clay low plasticity	
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL		
<u> </u>	sub round	rounded	well round	some fines	SM	silty-sand sandy-silt	high plast.	OH	clay med to high plasticity	
Note - density		foot above		some fine:	s SC	sand clay mixture	Peat	PT	humus, swamp soils, organic	
Tote - density	and in Old 42					nified Soil Classification Sy	stern			
				* S	ource U	nified Soil Classification Sy	stem.			

611 Broadway Suite 907G

New York, New York 10012

## Geologic Boring Log

					_		Ballast	Basin	Skimmer Area SWMU 44	
loring ID		Client:				Project:		-	ocation	
44-(			co Sun Oil	Company	]	RCRA Facility Investiga	ation		Yabucoa, Puerto Rico	
roject No.			ogist/Engine		Driller Drilling Contractor					
		Joseph Ly	sonski			Mario Sierra	(8)		Jaca & Sierra	
ate Started		Date Comp	leted			Drilling Method		Sample	er type 4" Carbon Steel Split Spoon	
/21/96		6/21/96				Tripod		_		
Depth		Reco-	Blow	PID			Soil Desci			
bgl	USCS	very	Counts	(ppm)					inless otherwise noted.	
(ft.)	Symbol	(per 24")	(per 6")				ze, sorting, moi			
0	-	-	·			Sand and silt mix, loose			ine to coarse grain	
		İ	į		No vi	sible contamination, no	product odo	[, ⊿.⊿. <b>%</b>	7 5 VP 3/2	
	<b>1</b>		1		Quatr	z, mica, pyrite, and lithi	c sand Hue:	dark d	FOWN 7.5 1 K 3/2	
1						m of spoon Hue: 2.5 Y		owish	brown	
•	Sample c	ollected			Immu	noassay sample collecte	ed.			
			- 1							
2	-	-	-	-	2-4 ft	Sand, fine to coarse, so	me silt, trace	clay,	4 1245	
								z, mic	a, pyrite, and lithic sand.	
		l				2.5 Y 5/3 light yellowish				
3	Sample c	ollected				moassay sample collecte	ed.			
					End b	oring				
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					S	oil Descriptions*				
Туре		Size (mm)		Gravel	Sym		Silt & Clay	Sym	<u></u>	
.,,,,,	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic	
Gravel	19-75	THE A	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
	2.0-4.8	43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast	CL	gravelly, sandy, silty clay	
	4.0-4.0			some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous	
Sand			<.08	201110 111100			100			
Sand Silt & clay			<.08	Sand			high plast.	СН	high plasticity clay	
Sand	very loose	loose	med dense		sw	well graded gravelly	high plast.	СН	Organic	
Sand Silt & clay Soil density	very loose dense	loose very dense	med dense	Sand	sw	well graded gravelly poorly graded gravelly	high plast. low plast.	OL	Organic silty clay low plasticity	
Sand Silt & clay	very loose	loose	med dense	Sand no fines	SW SP			_	Organic	

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# Geologic Boring Log

						100 - 10 - 10	Ballast l	Basin	Skimmer Area SWMU 44	
oring ID		Client:		1007		Project:	200		Location	
44-0			co Sun Oil			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico	
roject No.			logist/Engine	er		Driller			Drilling Contractor	
		Joseph L				Mario Sierra			Jaca & Sierra	
ate Started		Date Comp	leted			Drilling Method			er type 4" Carbon Steel Split Spoon	
5/21/96		6/21/96		DED.		Tripod				
Depth	1	Reco-	Blow	PID			Soil Descr	-		
bgl	USCS	<b>veгy</b>	Counts	(ppm)		•			inless otherwise noted	
(fl.)	Symbol	(per 24")	(per 6")				ze, sorting, mois			
0		-	- 1			Sand and silt mix, loose			ine to coarse grain	
	1				No visible contamination, no product odor,					
					Quartz, mica, pyrite, and lithic sand Hue: dark brown 7.5 YR 3/2					
1	Sample c	ollected	- 1	Bottom of spoon Hue: 2.5 Y 5/3 light yellowish brown						
		2000-0-000			Immu	noassay sample collecte	ed.			
			1					_		
2	-	-	- 1	-	2-4 ft	Sand, fine to coarse, sor	me silt, trace	clay,		
								, mic	a, pyrite, and lithic sand.	
						2.5 Y 5/3 light yellowish				
3	Sample o	ollected	1		Immu	noassay sample collecte	æd.			
		100			End b	oring				
		1	- 1							
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					١_	oil Descriptions*		_		
					_		Silt & Clay	Sym		
Туре		Size (mm)		Gravel	Sym		ont or Clay	37 M	Inorganic	
	Coarse		Fine	no fines	GW	well graded gravel	lanu mlast	ML	silts and very fine sand	
Gravel	19-75		4.8-19	little fines	GP	P		_	gravelly, sandy, silty clay	
Sand	2.0-4.8	.43-2.0	.08043	some fines	-			CL	micaceous/diatomaceous	
Silt & clay		<b>高温度</b>	<.08	some fines	GC	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		МН		
Soil density	very loose	loose	med, dense	Sand			high plast.	СН	high plasticity clay	
	dense	very dense		no fines	sw	well graded gravelly			Organic	
			1	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity	
Angularity	very ang.	angular	sub angular	muc mics		hearth Brasse A				
Angularity	very ang.	rounded	well round	some fines	SM	7	high plast.	OH PT	clay med, to high plasticity humus, swamp soils, organic	

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# Geologic Boring Log

								East Aisle Ditch SWMU 45					
oring ID		Client:			Project:			ocation					
45-		Puerto R	ico Sun	Oil Co.	RCRA Facility	y Invest	8-11012	Yabucoa, Puerto Rico					
roject N		AMAI Ge			Driller		T.	Prilling Contractor					
		Néstor N			Mario Sierra								
Date Star		Date Com		·	Drilling Method Sampler type								
1/2/96		7/2/96	•		Tripod 2"x 24" Carbon Steel Split Spoon								
Depth		Reco-	Blow	PID	Soil Description								
bgl	USCS	very	Counts	(ppm)	D	escription	made from auger cutt	ings, unless otherwise noted.					
(tr.)	Symbol	(grain size, sorting, moisture, color/hue etc.)											
0	SM	12	1-5-5-7	110	0-2 ft. Sand. Loos	e, moist	to saturated, light	yellowish brown (2.5Y6/3) to					
U	Sivi	'-			black (Glev 1, 2.5/	N) to da	rk gray (2.5Y4/1).	. Sand composed of quartz, mica,					
1		l 🕳 🖠		ŀ	pyrite, shell and lit	hic fragi	nents varying in s	ize from fine to coarse.					
,		<b>V</b>			Hydrocarbon odor	and free	product observed	l. Full analysis and Immunoassay					
•		ple colle	eted		samples collected.		-						
2	Бап	ipie cone	rcteu j		Samples conceres.								
	1	1			Boring terminated.								
		l	1		Doing terminates.								
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				<u> </u>	<u> </u>		- 11						
							n Details						
Casine	material		Screen s	lot size	Screen Interval		Filter Pack	Cap Type					
		le 40 PV	1	0 inch	0-5 ft.	i	No. 2 Silica sand	Watertight					
			1 0.02	O HIGH	Lock type:								
Security	y casing/π	anhole:			1								
none					none	A E	211 51 Casl ranged						
Notes:	Well (	1.25") in	stalled or	n 7/15/90	6. Filter pack range	ed mom	3 -3. Seat tanged						
	from (	)-3". Bor	ehole pai	tially co	llapsed. Screen par	tially ex	posea.						
					Well De	velopm	ent Data						
Date		Technic	ne:	· · ·			Volume	purged:					
Date:	12/07	Decom	by hand	w/Water	erra foot valve and 5/8" Polyethylene hose								
7.	/2/96												
	Ter	np (°C)	SC (	μS/cm)	pН	MOIES.	SC - Specific con						
Initial	: ]												
Final:						<u> </u>							
							<del></del>						

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### Geologic Boring Log

								East Aisle Ditch SWM	0 43			
Boring ID		Client:			Project:			ocation				
45-0	)2	-	lico Sun (	Oil Co.	RCRA Facilit	y Invest		Yabucoa, Puerto Rico				
roject No.			ologist/En		Driller		11	Prilling Contractor				
			И. Rivera		Mario Sierra			aca & Sierra				
Date Starte	d	Date Com			Drilling Method Sampler type							
7/2/96	7/2/96 Tripod 2"x 24" Ca							2"x 24" Carbon Steel Spli	t Spoon			
		Reco- Blow PID Soil Description										
Depth	TICOC		Counts	(ppm)	מ	Description made from auger cuttings, unless otherwise noted.  (grain size, sorting, moisture, color/hue etc.)						
bgl	USCS	very	i I	(ppiii)	_							
(ft.)	Symbol		3-6-9-1	116	0-2 ft Sandy clay			oist to wet, light brown (7	7.5YR6/3)			
0	SC, S	12	D-0-3-1	110	to light gray (7.5Y	R7/1)	Sand composed of	f quartz, mica, pyrite, she	ll and			
					lithic fragments va	rving in	size from fine to	coarse. Hydrocarbon odd	r and free			
		l _			product observed	Full an	alvsis and Immun	oassay samples collected	•			
1					product observed.	1 (111 (111)	,					
	San	ple coll	ected									
_		١ .			2 4 64 Cond Loop	a coturs	ted light gray (7	5YR7/1). Sand compose	d of			
2	SM	8	4-6-6-7	92	2-4 IL Sand. Loos	c, saiwi e chell	and lithic fragmer	its varying in size from fi	ne to			
					quartz, mica, pyrite, shell and lithic fragments varying in size from fine to coarse. Hydrocarbon odor and free product observed.							
_					coarse. Hydrocaro	on odor	and nee product					
3				ļ	Daring towningted							
			1		Boring terminated	•						
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		<u></u>	•		Well Cons	tructio	n Details					
Casing ma	terial		Screen si	ot size	Screen Interval		Filter Pack	Cap Type				
		40 PVC		0 inch	0-5 ft.		No. 2 Silica sand	Watertight				
Security of			1 3,02		Lock type:							
none					none							
none Notes:	Welli	nstalled a	on 7/15/9	6. Filter	pack ranges from	3"-5'. Se	al ranges from 0-	3". Riser has 32".				
MOTES:	44 CH I	induited (						1				
					Well Dev	elopme	nt Data					
	ji.	m		<del></del>			Volume	purged:				
Date:		Techniq	uc:		5/8" high density [	olvethy						
<u> </u>	·-					Motes.	SC - specific con	ductance				
	Тег	np (°C)	SC()	uS/cm)	<del>                                     </del>	140163.	DC - Specific con					
Initial:	<u> </u>		<del> </del>									
Final:	1											

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### Geologic Boring Log

									ast Aisle Ditch SWMU 45	
oring ID		Client:				Project:	ion		ocation Yabucoa, Puerto Rico	
45-(			ico Sun O		-	RCRA Facility Investigat	ION		Orilling Contractor	
roject No.			ologist/Engir	neer		Mario Sierra	20		aca & Sierra	
<u> </u>		Date Com	1. Rivera	·	Drilling Method Sampler type					
late Started 1/2/96		7/2/96	hieren			Tripod			"x 24" Carbon Steel Split Sp	
		Reco-	Blow	PID	111,000					
Depth	USCS	very	Counts	(ppm)						
bgl	l I		(per 6")	Фрин	(grain size, sorting, moisture, color/hue etc.)					
(fl.)	Symbol	(per 24")	3-5-6-10	0	0-2 ft. Sandy clay to sand. Loose to hard, moist, light yellowish brown					
0	SC, SM	12	0-0-10	· ·	(2.5Y6/3). Sand composed of quartz, mica, pyrite, shell and lithic fragment					
					ບລະນາ	no in size from fine to co:	arse. Roots o	bserv	ed. Immunoassay samples	
1		33 4 3			varying in size from fine to coarse. Roots observed. Immunoassay samples collected.					
_	Sample o		0063		the second secon					
2	SM	24	9-8-6-3	0	2-4 II (2 63/	. Sand to siny sand. Loos	7/1) Sand	nom	osed of quartz, mica, pyrite,	
_					(4.3 ¥	o/5) to right gray (7.51 K	ing in cize fi	om fi	ne to coarse. Immunoassay	
3	Sample o	ollected					mg ni site n	AIII III	in to action. Tititiminamil	
					-	les collected.				
4 👊					Roun	g terminated.				
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						Soil Descriptions*				
Туре	1	Size (mm	)	Gravel	Sym		Silt & Clay	Sym		
-38-	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic	
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay	
	2.04.8			some fines	_	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous	
Silt & clay			med, dense		<del>                                     </del>	- 99.0	high plast.	СН	high plasticity clay	
Soil density	very loose	_			SW	well graded gravelly	g., p		Organic	
		very dens	SC .	no fines			1	Tot 1	silty clay low plasticity	
	dense	<del></del>								
Angularity	very ang.	angular	sub angular			poorly graded gravelly	low plast.	OL		
Angularity	<del></del>	<del></del>	sub angular well round	little fines some fines some fines	SM	poorly graded gravelly silty-sand sandy-silt sand clay mixture	high plast.	OH PT	clay med. to high plasticity humus,swamp soils, organic	

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### Geologic Boring Log

									East Aisle Ditch SWMU 45
oring ID		Client:	<del></del>			Project:			ocation
45-0			ico Sun O			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico
roject No.			ologist/Engi	neer		Driller			Orilling Contractor Jaca & Sierra
			1. Rivera	2.0		Mario Sierra  Drilling Method	<del></del>		Sampler type
ate Started		Date Com	pleted			Tripod.			2"x 24" Carbon Steel Split Spoo
/2/96		7/2/96	T01	DID I		Tipou.	Soil Desci		
Depth		Reco-	Blow	PID				-	nless otherwise noted.
bgl	USCS	very	Counts	(ppm)					
(ft.)	Symbol	(per 24")	(per 6")				ze, sorting, moi		
0	SC, SM	12	3-5-6-10	0	0-2 1	t. Sandy clay to sand. Lo	ose to sum, i	noisi,	lef ments sice symite shell
					(2.5Y	(6/3) to brown (7.5 Y K4/2	s). Sand con	ipose	d of quartz, mica, pyrite, shell
1	Sample c	ollected			and l	ithic fragments varying i	n size, fine to	coar	se. Iron oxide nodules and
			Ī		roots	observed. Full analysis a	ind Immunoa	issay :	samples collected.
2	SM	24	9-8-6-3	0	2-4 f	t. Sand to silty sand. Loo	se, moist to v	vet, li	ght yellowish brown
					(2.5)	(6/3) to light gray (7.5YF	(7/1). Sand	comp	osed of quartz, mica, pyrite,
3	Sample c	ollected							ne to coarse. Iron oxide stains
					obsei	ved. Immunoassay samp	les collected	•	
4					Borit	ng terminated.			
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	<u> </u>	<u> </u>				Call Deceminations			
	<del>,                                      </del>				6	Soil Descriptions*	Silt & Clay	Sym	
Туре	ļ	Size (mm		Gravel	Sym	well graded grayel	Sitt of City	-7. W	Inorganic
	Coarse	Medium	Fine	no fines	GW	well graded gravel	low plast.	ML	silts and very fine sand
ravel	19-75	\$ 365 cm		little fines	GP	poorly graded gravel	<del></del>	CL	gravelly, sandy, silty clay
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	MH	micaceous/diatomaceous
ilt & clay	<b>经</b> 以及时	Add and	<.08	some fines	GC	sand,clay,gravel,mix	high plast.		
ioil density	very loose	loose	med. dense	Sand			high plast.	СН	high plasticity clay
	dense	very dens		no fines	sw	well graded gravelly	ļ	- T	Organic
					0.00	I	low plast.	lor I	silty clay low plasticity
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	IOW PIESC.	-	
Angularity	very ang.	angular rounded	sub angular well round	little fines some fines	_	silty-sand sandy-silt	high plast.	OH PT	clay med. to high plasticity

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## Geologic Boring Log

									East Aisle Ditch SWMU 45
Boring ID		Client:				Project:			Location
45-0			ico Sun C			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico Drilling Contractor
roject No.			ologist/Eng	ibeer		Driller Namia Siana			Jaca & Sierra
			1. Rivera			Mario Sierra Drilling Method			Sampler type
Date Started 1/2/96		Date Com 7/2/96	pietea			Tripod			2"x 24" Carbon Steel Split Spoo
			Dlaw	PID		Tripod	Soil Desc		
Depth	TIOCO	Reco-	Blow			December and		-	mless otherwise noted.
bgl	USCS	very	Counts	(ppm)		•	ize, sorting, moi		
(ft.)	Symbol	(per 24")	(per 6")	40	0.0.6	t. Sandy silt to sand. Loo			
0	SM	18	2-4-5-5	49					d of quartz, mica, pyrite, shell
1						ithic fragments varying i			
	Sample c					ocarbon odor. Full analy			
2	SM	24	5-4-4-3	43	2-4 f	t. Sand to silty sand. Loo	se, slightly I	noist,	light yellowish brown
		_ :			(2.5)	76/3) to dark gray (7.5YI	R4/1). Sand	comp	osed of quartz, mica, pyrite,
3	Sample c	ollected							coarse. Hydrocarbon odor.
					Root	s observed. Full analysis	and Immuno	oassay	samples collected.
4	SM	24	3-4-4-3	0	4-6 f	t. Sand. Loose, slightly n	noist, black (	Gley	1, 2.5/N). Sand composed of
			İ		quart	z, mica, pyrite, shell and	lithic fragm	ents v	arying in size from fine to
5	Sample c	ollected		2	coars	se. Hydrocarbon odor. Ro	oots observed	d. Full	analysis and Immunoassay
					samp	eles collected.			
6									
•	i	▼			Вогі	ng terminated. Groundwa	ater depth wa	as dete	rmined using pointer.
									ø
					<u> </u>	Soil Descriptions*			
Туре		Size (mm	)	Gravel	Sym		Silt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic
Gravel	19-75	EST.	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
and			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous
		per professional			-			011	
ilt & clay	very loose			Sand			high plast.	CH	high plasticity clay
ilt & clay	very loose	loose	med. dense		SW	well graded gravelly	high plast.	СН	high plasticity clay  Organic
Silt & clay Soil density	very loose dense	loose very dens	med. dense	no fines	SW	well graded gravelly			
Sand Silt & clay Soil density Angularity	very loose	loose	med. dense	no fines little fines	SP	well graded gravelly poorly graded gravelly silty-sand sandy-silt	low plast.	OL OH	Organic

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## Geologic Boring Log

									East Aisie Ditch SWMU 45
Boring ID		Client:				Project:			Location Volumes Duesto Bios
45-(			Cico Sun C		ıny	RCRA Facility Investiga  Driller	LIOII		Yabucoa, Puerto Rico Drilling Contractor
roject No.			ologist/Eng M. Rivera	IBEEF		Mario Sierra			Jaca & Sierra
ate Started		Date Com		-		Drilling Method			Sampler type
7/1/96		7/1/96	pieteu			Tripod			2"x 24" Carbon Steel Split Spoo
		Reco-	Blow	PID		Tipou	Soil Desc		
Depth	TIECE		Counts			Description made		-	unless otherwise noted.
bgl	USCS	very		(ppm)		• 100	ize, sorting, mo	-	
(ft.)	Symbol	(per 24")	(per 6")	3	0.26	t. Sandy silt to sand. Loo			
0	SM	12	3-4-6-9	3		•			
									ed of quartz, mica, pyrite, shell
1	Sample c	ollected			I.	ithic fragments, from fin-	e to coarse.	шши	noassay samples
	gti .				colle		21.1.1		1*-1.4 31 2*-3. 3
2	SM	24	9-8-8-7	135		t. Sand to silty sand. Loo			
									osed of quartz, mica, pyrite,
3	Sample c	ollected				and lithic fragments, fro			
						taining observed. Roots			
4	SM	22	3-3-4-6	3					.5YR7/1) to dark brown
									rite, shell and lithic fragments
5	Sample c	ollected			vary	ing in size from fine to co	oarse. Immu	noassa	sy samples collected.
6	SM	12	1-3-4-3	3					.5YR4/1) to dark brown
		▼			(7.5)	(R3/4). Sand composed of	of quartz, mi	ica, py	rite, shell and lithic fragments
7		····				ing in size from fine to co			
,	227					rved.	•		•
8						ng terminated.			
0	22				DOI 11	ig terminates.			
	1	1							
	1								
	1					27			
				,	1				
		<u> </u>				C-11 December the most			
						Soil Descriptions*	lon, a co	Io.	
Турс		Size (mm		Gravei	Sym		Silt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel		J	Inorganic
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
ilt & clay		44.2	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
oil density	very loose	loose	med. dense	Sand			high plast.	СН	high plasticity clay
	dense	very dens		no fines	sw	well graded gravelly			Organic
Angularity	very ang.	angular	sub angular		_	poorly graded gravelly	low plast.	OL	silty clay low plasticity
ANPUNITITY	Aci A stif.	an Parier -	Para mignim	***** THIC3	-		<del>                                     </del>	-	
	and a	may 100 de d	wall come	come fines	CNA	cilty_cand candy_cilt	thigh plact	IUH I	clay med, to high diasucity
Note - density	sub round	rounded	well round	some fines	-	silty-sand sandy-silt sand clay mixture	high plast. Peat	OH PT	clay med. to high plasticity humus,swamp soils, organic

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# Geologic Boring Log

Boring ID							
_		Client:			Project:		Location
45-0	)7		tico Sun C			ion	Yabucoa, Puerto Rico
roject No.			ologist/Eng	ineer	Driller		Drilling Contractor Jaca & Sierra
-4- Chaudad		Date Com	M. Rivera	<del></del>	Mario Sierra Drilling Method	-	Sampler type
ate Started /1/96		7/1/96	ipieted		Tripod		2"x 24" Carbon Steel Split Spot
			Dlaw	PID	Tripod	Soil Descrip	
Depth	TICCC	Reco-	Blow		B	-	s, unless otherwise noted.
bgl	USCS	very	Counts	(ppm)	1	-	
(ft.)	Symbol	(per 24")	(per 6")		<u> </u>	ze, sorting, moistur	
0 .	SM, SC	14	2-4-5-7	35	0-2 ft. Clayey sand to sand. Lo		
_		<u> </u>			1, , ,	•	sed of quartz, mica, pyrite, shell
ì	Sample o	ollected			and lithic fragments varying in	size, immunoa	ssay samples
					collected.		
2	SM	12	9-9-7-6	1	2-4 ft. Sand. Loose, slightly mo		
2.4					Sand composed of quartz, mica		
3	Sample o	ollected			size from fine to coarse. Immur	noassay sample	s collected.
4	SM	2	4-2-2-5	0	4-6 ft. Sand. Loose, wet, light		
							yrite, shell and lithic fragments
5		lacksquare			varying in size from fine to coa	rse. Last 4" sho	ow black organic material
					(naturally occurring).		
6	ĺ			[	Boring terminated.		
			1		ŀ		
					93		
			<b>i</b> .	j			
		l					
				1			
					Soil Descriptions*		
Туре		Size (mm)		Gravel		Silt & Clay Syn	· · · · · · · · · · · · · · · · · · ·
Туре	Coarse	Size (mm) Medium	Fine	Gravel no fines		Silt & Clay Syn	Inorganic
	Coarse 19-75				Syun S GW well graded gravel	Silt & Clay Syn	· · · · · · · · · · · · · · · · · · ·
ravel		Medium	Fine	no fines	Sym S GW well graded gravel GP poorly graded gravel		Inorganic
ravel and	19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19	no fines little fines	Sym S GW well graded gravel GP poorly graded gravel GM sand, silt, gravel mix le	ow plast. ML	Inorganic silts and very fine sand gravelly,sandy,silty clay
ravel and ilt & clay	19-75 2.0-4.8	Medium 43-2.0	Fine 4.8-19 .08043 <.08	no fines little fines some fines some fines	Sym S GW well graded gravel GP poorly graded gravel II GM sand,silt,gravel mix II GC sand,clay,gravel,mix II	ow plast. ML ow plast. CL nigh plast. MH	Inorganic silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous
ravel and ilt & clay	19-75 2.0-4 8 very loose	Medium .43-2.0 loose	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand	Sym S GW well graded gravel GP poorly graded gravel li GM sand, silt, gravel mix li GC sand, clay, gravel, mix h	ow plast. ML ow plast. CL	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay
ravel and lit & clay oil density	19-75 2.0-4 8 very loose dense	43-2.0 loose very dense	### 4.8-19  .08043  <.08  med. dense	no fines little fines some fines some fines Sand no fines	Sym S GW well graded gravel GP poorly graded gravel li GM sand, silt, gravel mix li GC sand, clay, gravet, mix li SW well graded gravelly	ow plast. ML ow plast. CL nigh plast. MH nigh plast. CH	inorganic  silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic
ravel and ilt & clay oil density	19-75 2.0-4.8 very loose dense very ang	.43-2.0 loose very dense angular	4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand no fines little fines	Sym GW well graded gravel GP poorly graded gravel Il GM sand, silt, gravel mix Il GC sand, clay, gravel, mix Il SW well graded gravelly SP poorly graded gravelly Il	ow plast. ML ow plast. CL nigh plast. MH nigh plast. CH ow plast. OL	inorganic  silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity
ravel and	19-75 2.0-4 8 very loose dense	43-2.0 loose very dense	### 4.8-19  .08043  <.08  med. dense	no fines little fines some fines some fines Sand no fines	Sym GW well graded gravel GP poorly graded gravel II GM sand,silt,gravel mix II GC sand,clay,gravel,mix II SW well graded gravelly SP poorly graded gravelly SM silty-sand sandy-silt II	ow plast. ML ow plast. CL nigh plast. MH nigh plast. CH	inorganic  silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic

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### Geologic Boring Log

									East Aisle Ditch SWMU 45
Boring ID		Client:				Project:			ocation
45-0			ico Sun O			RCRA Facility Investigation	tion		Yabucoa, Puerto Rico
roject No.			ologist/Engi	Deer		Driller			Orilling Contractor Jaca & Sierra
			1. Rivera			Mario Sierra  Drilling Method			Sampler type
ate Started /1/96		Date Com 7/1/96	pieteu			Tripod			2"x 24" Carbon Steel Split Spoo
			Blow	PID	•	111000	Soil Desc		
Depth	,,,,,,,,	Reco-	1	I I		Description made		_	nless otherwise noted
bgl	USCS	very	Counts	(ppm)		•	ize, sorting, moi		
(fl.)	Symbol	(per 24")	(per 6")		^ ^ ^	t. Silty sand to sand. Loos			
0	SM	18	2-44-5-7	69					
						tht brown (7.5YR6/3) to			
1									ents. Slight hydrocarbon
	Sample c		ľ	. 1	odor.	Full analysis and Immun	ioassay samp	nes co	ill barre (2.63/6/2)
2	SM	18	6-6-5	9		ft. Sand. Loose, slightly			
					to lig	ght brown (7.5YR6/3) to	light gray (7.	5YR7	//I). Quartz sand.
3	Sample c	ollected							size from fine to coarse.
	SM	14	4-1-1	0	Full a	analysis and Immunoassa	y samples co	llecte	d.
4		▼							7 (7.5YR7/1). Quartz sand
					quart	z, mica, pyrite, shell and	lithic fragme	nts va	rying in size from fine to
5					coars				
					Borii	ng terminated.			
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	<u> </u>	<u> </u>				Soil Descriptions*			
						Bon Descriptions	Silt & Clay	Sym	(A)
Туре	ļ	Size (mm)		Gravel	Sym		Sili & Ciay	Зуш [	Inorganic
	Coarse	Medium	Fine	no fines	GW	well graded gravel	1	l.a. I	silts and very fine sand
Gravel	19-75	**学生经验	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	
and	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay
ilt & clay		灵器体型	<.08	some fines	GC	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous
oil density	very loose	loose	med dense	Sand			high plast.	СН	high plasticity clay
	dense	very dens	e	no fines	sw	well graded gravelly			Organic
	<del>                                     </del>	angular		little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
ngularity	very ang	augua.							
Ingularity	very ang.		1	some fines	SM	silty-sand sandy-silt	high plast.	ОН	clay med to high plasticity
- 0	sub round also in blows	rounded	well round		<del></del>	silty-sand sandy-silt sand clay mixture	high plast.	OH PT	clay med to high plasticity humus,swamp soils, organic

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### Geologic Boring Log

East	Aisle	Ditch	<b>SWMU</b>	45
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							110		Alsie Ditch SWMU 45
oring ID		Client:				Project:	1000 III 1000 1000		ocation Yabucoa, Puerto Rico
45-09			ico Sun O			RCRA Facility Investigati	on		rilling Contractor
roject No.			ologist/Engi 1. Rivera	neer .		Mario Sierra			aca & Sierra
nte Started		Date Com				Drilling Method			Sampler type
/1/96		7/1/96	preced			Tripod		- 0	2"x 24" Carbon Steel Split Spoo
Depth		Reco-	Blow	PID		2- 2000-0-0	Soil Desc	riptio	B ·
-	uscs	very	Counts	(ppm)		Description made			nless otherwise noted.
bgl			(per 6*)				z, sorting, mo		
(ft.)	Symbol	(per 24") 22	2-4-7-5	224	0-2 8	. Sand to silty sand. Loos			
0	SM	22	2-4-7-5	224		(6/3) to brown (7.5YR4/3			
. I	C	-Mantad				and lithic fragments vary			
1	Sample c	onecteu				malysis and Immunoassay			
			(22			ft. Sand. Loose, moist to			
2	SM	16	6-7-7	263		d composed of quartz, mic			
		1	1	}				icii an	d fidic fragments
3						ing in size from fine to co			
	Sample c	ollected				inoassay samples collecte	a.		
4				Į	Borin	ig terminated at 3.5 ft.			
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		5.00		-33					0.2
		3,		- 10	7000	Soil Descriptions*			
Туре	1757	Size (mm	)	Gravel	Sym	3 and and agreement	Silt & Clay	Sym	1
-3pc	Coarse	Medium	Fine	no fines	_	well graded gravel	S - 512		Inorganic
Second		A STORE	4.8-19	little fines			low plast.	ML	silts and very fine sand
iravel	19-75	40.00	_	some fines	_	7	low plast.	CL	gravelly,sandy,silty clay
and	2.0-4.8	43-2.0	.08- 043	-		- The second sec	high plast.	МН	micaceous/diatomaceous
ilt & clay	題記録では	STREET, ST	<.08	some fines	GC			-	high plasticity clay
oil density	very loose	loose	med dense		<u></u>		high plast.	СН	
	dense	very dens	e	no fines	sw	well graded gravelly		_	Organic
0.90			1	that Com	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity
Ingularity	very ang	angular	sub angular	little fines	31	poorly graded gravelly		_	
Logularity	very ang	angular rounded	sub angular well round		1		high plast.	ОН	clay med to high plasticity

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# Geologic Boring Log

									East Aisle Ditch SWMU 45
Boring II	)	Client:			Project:				Location
45	-09	Puerto Ri			RCRA Facili	ty Inves	tigation		Yabucoa, Puerto Rico
Project N	io.	AMAI Geo	logist/Engi	neer	Driller				Drilling Contractor
		Néstor M	. Rivera		Mario Sierra				Jaca & Sierra
Date Star	ted	Date Comp	leted		Drilling Method	1			Sampler type
6/27/96		6/27/96			Tripod				2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow	PlD				Descri	-
bgl .	USCS	very	Counts	(ppm)	De				ngs, unless otherwise noted.
(fl.)	Symbol	(per 24")	(6" each)						ure, color/hue etc.)
0	SM	24	2-3-4-5	126	0-2 ft. Sand. Loos	e, slight	ly moist, d	ark yell	owish brown (10YR3/4) to black
		•			(10YR 2/1).Sand o	compose	d of quart	z, mica,	pyrite, shell and lithic fragments
1	Sample	Collected			size from fine to c	oarse. L	ocally silty	/. lmmu	moassay samples collected.
2	SM	18	4-5-6	197	2-3.5 ft. Sand. Loc	ose, slig	htly moist,	very da	ark gray (Gley 1,3/N)
									and lithic fragments
3	Sample	Collected			size from fine to c	oarse. Ii	nmunoass	ay samp	oles collected.
							from 2-6 fl	t. Free 1	product at bottom 0.5 ft.
4					Boring terminated	at 5 ft.			
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			- 1		Well Consti	uction	Details		
Casing o	material		Screen sl	ot size	Screen Interval		Filter Pack		Cap Type
	chedule 4	0 PVC	0.020	) inch	1-6 ft.		No. 2 Sili	ca sand	Watertight
	casing/ms				Lock type:				
none					none	7			
Notes:	Well co	mpleted or	n 7/15/96	. Filter	pack ranged from 3	"-6'. Se	al ranged f	rom 0-3	3".
	Soil at t	he bottom	of the bo	ring sh	owed strong hydrog	arbon o	dor and vi	sible pr	oduct.
			(2)		Well Deve	lopmen	Data		
Date:		Technique	::	_	<u> </u>	-		Volume	purged:
			·						
<b>-</b>		np (°C)	SC (L	(S/cm)	pН	Notes:	SC - spec	ific con	ductance
Initial:		<u></u>		<del></del>					
Final:	1		1						
L DIGI.	1								

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# Geologic Boring Log

								East Aisle Ditch SWMU 45
Boring 10	)	Client:			Project:			Location
45-	-10	Puerto P	tico Sun	Oil Co.	RCRA Facili	ty Invest		Yabucoa, Puerto Rico
Project N	io.	AMAI Ge	ologist/En	gineer	Driller	•	I	Drilling Contractor
		Néstor N	и. Rivera	ı	Mario Sierra			Јаса & Siеrra
Date Star	ted	Date Com			Drilling Metho	d		Sampler type
6/28/96		6/28/96			Tripod	2"x 24" Carbon Steel Split Spoon		
Depth		Reco-	Blow	PID			Soil Desci	ription
bgl	uscs	very	Counts	(ppm)	1	Description	made from auger cut	tings, unless otherwise noted.
(fl.)	Symbol	(per 24")	(6" each)	(Pinny			rain size, sorting, moi:	
0	CL, S	12	1-1-2-2	1	0-2 ft. Clay to silt			
U	CL, 5	12		•				(7.5YR2.5Y6/4). Sand
								lithic fragments varying
		ple colle	octod		in size from fine to			
1	Sam	ipie com	Cieu		Full analysis and l			ected.
	ŀ		1		i dii anaiysis and i	mmuno	Bary Statepies Con-	
	C) 4	12	5-2-5-7	25	2-3-5# Cond I a	nse slist	itly moist light ve	ellowish brown (7.5YR6/3) to light
2	SM	12	3-2-3-/	23	aray (Glav I 7/NI)	Sand co	mnosed of allerty	mica, pyrite, shell and lithic fragments
					size from fine to a	Oarce U	ndrocarbon odor a	and free product observed.
			1		Immunoassay san			are not broken and the
3	San	ple colk	ectea	(30)	immunoassay san	ibiez con	ected.	
	ļ	ł			Danina samainasad	1 at 5 A		
			ļ. ·		Boring terminated	ו מנ שונ.		
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		<u> </u>						
					Well Cor			
Casing n	naterial		Screen sl	ot size	Screen Interval		•	Сар Туре
		40 PVC	0.020	inch	0-5 ft.		No. 2 Silica sand	Watertight
Security	casing/m	anhole:			Lock type:			v.
none	_				попе			
Notes:	Well in	stalled o	n 7/15/90	5. Filter	pack ranges from 3	3"-5'. Sea	al ranges from 0-3	#
		s 2 ft. hig			100			
			·		Well De	velopme	ent Data	
Date:		Techniqu	ue:				Volume p	ourged:
				p using	5/8" high density p	polyethy	ene hose.	
-		np (c)	~ -	S/cm)	pH	Notes:	SC - specific cond	luctance
Initial:	1.0	p ( <del>v)</del>		-				
Final:	1		-					
r midl.			<u> </u>		<u> </u>			

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## **Geologic Boring Log**

									East Aisie Ditch SWMU 45
Boring ID		Client:	··- C 1	):1 C		Project:	tion		Location Yabucoa, Puerto Rico
45-1	11		Rico Sun C		шÿ	RCRA Facility Investiga Driller	IGOII		Drilling Contractor
Project No.			ologist/Eng M. Rivera	ineer		Mario Sierra			Jaca & Sierra
Date Started		Date Com				Drilling Method			Sampler type
5/28/96		6/28/96	ipieteu			Tripod			2"x 24" Carbon Steel Split Spo
			Dless	DID		111pod	Soil Desc		
Depth	***	Reco-	Blow	PID		man electrical		-	
bgl	USCS	very	Counts	(ppm)		· · · · · · · · · · · · · · · · · · ·		-	unless otherwise noted.
(ft.)	Symbol	(per 24")	(per 6")				ize, sorting, moi		
0	CL, SM	24	1-1-1-5	0		t. Clay to sandy silt, to sa			
						(R4/3) to light brown (7.			
1	Sample c	ollected			t	' L V '	•	-	in size from fine to coarse.
		▼			Full	analysis and Immunoassa	ay samples co	ollect	ed.
2	SM	18	14-12-11	0	2-3.5	ft. Sand. Loose, saturate	ed, light yello	wish	brown (2.5Y6/3).
					Sand	composed of quartz, mi	ica, pyrite, sh	iell ai	nd lithic fragments
3	Sample o	ollected				ing in size from fine to co			
~						unoassay sample collecte			-
4				,		ng terminated at 3.5 ft.			
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			**						
			**			Soil Descriptions*			
Туре		Size (mm	×	Gravel	Sym	Soil Descriptions*	Siit & Clay	Sym	
Type	Coarse	Size (mm) Medium	Fine	Gravel no fines	Sym	Soil Descriptions*	Siit & Clay	Sym	Inorganic
	Coarse	Medium				•		Sym ML	Inorganic silts and very fine sand
iτavel	Coarse 19-75	Medium	Fine 4.8-19	no fines little fines	GW GP	well graded gravel poorly graded gravel	low plast.	ML	
iravel and	Coarse 19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19 .08043	no fines little fines some fines	GW GP GM	well graded gravel poorly graded gravel sand,silt,gravel mix	low plast.	ML CL	silts and very fine sand
iravel and ilt & clay	Coarse 19-75 2.0-4.8	Medium .43-2.0	Fine 4.8-19 .08043 <.08	no fines little fines some fines some fines	GW GP GM	well graded gravel poorly graded gravel	low plast. low plast. high plast.	ML CL MH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous
Gravel and ilt & clay	Coarse 19-75 2.0-4.8 very loose	Medium .43-2.0 loose	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand	GW GP GM GC	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix	low plast.	ML CL	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay
Gravel and ilt & clay	Coarse 19-75 2.0-4.8	Medium 43-2.0 loose very dens	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand no fines	GW GP GM GC	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly	low plast. low plast. high plast. high plast.	MIL CL MH CH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic
Gravel Sand	19-75 2.0-4.8 very loose dense very ang.	.43-2.0 loose very dens	Fine 4.8-19 .08043 <.08 med. dense	no fines little fines some fines some fines Sand no fines little fines	GW GP GM GC SW SP	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly poorly graded gravelly	low plast. low plast. high plast. high plast. low plast.	MIL CL MH CH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic silty clay low plasticity
Gravel and Gilt & clay Goil density	19-75 2.0-4.8 very loose dense very ang. sub round	.43-2.0 loose very dens angular rounded	Fine 4.8-19 .08043 <.08 med. dense e sub angular well round	no fines little fines some fines some fines Sand no fines	GW GP GM GC SW SP	well graded gravel poorly graded gravel sand,silt,gravel mix sand,clay,gravel,mix well graded gravelly	low plast. low plast. high plast. high plast.	MIL CL MH CH	silts and very fine sand gravelly,sandy,silty clay micaceous/diatomaceous high plasticity clay Organic

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### Geologic Boring Log

Yabucoa, Puerto Rico Drilling Contractor Jaca & Sierra Sampler type 2"x 24" Carbon Steel Split Spoo Soil Description In auger cuttings, unless otherwise noted. Iorting, moisture, color/hue etc.) Ioose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from I Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell ze from fine to coarse.	Project: RCRA Facility Inves Driller Mario Sierra Drilling Method	лу		tico Sun O ologist/Engi		12	Boring ID 45- Project No.
Drilling Contractor Jaca & Sierra  Sampler type 2"x 24" Carbon Steel Split Spoo  Soil Description In auger cuttings, unless otherwise noted.  orting, moisture, color/hue etc.)  loose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from  Full analysis and Immunoassay  ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	Driller Mario Sierra Drilling Method	лу				12	
Jaca & Sierra  Sampler type  2"x 24" Carbon Steel Split Spool Soil Description In auger cuttings, unless otherwise noted.  orting, moisture, color/hue etc.)  loose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from  Full analysis and Immunoassay  ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	Mario Sierra  Drilling Method		neer	ologist/Engi	ABMATCA		mainet No.
Sampler type 2"x 24" Carbon Steel Split Spool Soil Description In auger cuttings, unless otherwise noted. I loose, slightly moist to wet, I ish brown (2.5Y6/3). Sand composed I ithic fragments varying in size from I Full analysis and Immunoassay I lowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	Drilling. Method			/ D			roject ivo.
2"x 24" Carbon Steel Split Spool Soil Description In auger cuttings, unless otherwise noted. I loose, slightly moist to wet, Iish brown (2.5Y6/3). Sand composed Iithic fragments varying in size from I Full analysis and Immunoassay I lowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell				1. Rivera	Date Com		onte Started
Soil Description In auger cuttings, unless otherwise noted. Iooting, moisture, color/hue etc.) Ioose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from In Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	Tripod			pieceu	6/27/96		6/27/96
n auger cuttings, unless otherwise noted.  orting, moisture, color/hue etc.)  loose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from . Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	Tipou	1	PID	Blow	Reco-		-
orting, moisture, color/hue etc.)  loose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from . Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	Description	[		Counts	1	USCS	Depth
loose, slightly moist to wet, ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from . Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	-	1	(ppm)		very		bgl
ish brown (2.5Y6/3). Sand composed lithic fragments varying in size from . Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell		0.2	0	(per 6")	(per 24")	Symbol	(ft.)
lithic fragments varying in size from . Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell			ľ	1-1-1-1	18	CL, SM	U
Full analysis and Immunoassay ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell	, , -				Collected	Sample (	
ellowish brown (2.5Y6/3) to light of quartz, mica, pyrite, shell			ŀ		Conecten	Sample	1
of quartz, mica, pyrite, shell	_				١		_ *
of quartz, mica, pyrite, shell	ples collected.		0	11-10-10	18	SM	2
ze from fine to coarse.					Collected	Sample (	3
	•	•					
	nunoassay samples co						4
	ring terminated.	Bo					
		ı					
		l		1			
		ı					
	12					8	
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			1 1				
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		Į.					
	Soil Descriptions*	_	200 P. A				
& Clay Sym	<del></del>	Sym	Gravel		Size (mm)		Tuna
Inorganic	well graded gravel	GW	no fines			Carre	Туре
plast. ML silts and very fine sand	poorly graded gravel	_		Fine	Medium	Coarse	Second 1
		GP	little fines	4.8-19		19-75	iravel
plast. CL gravelly,sandy,silty clay	sand,silt,gravel mix	_	some fines	.08043	43-2.0	2.0-4.8	and
plast. MH micaceous/diatomaceous	sand,clay,gravel,mix	GC	some fines	< 08			ilt & clay
plast. CH high plasticity clay			Sand	med. dense	loose	very loose	oil density
Organic	well graded gravelly	sw	no fines		very dense	dense	
plast. OL silty clay low plasticity	poorly graded gravelly	SP	little fines	sub angular	angular	very ang.	ngularity
plast. OH clay med. to high plasticity	silty-sand sandy-silt	SM	some fines	well round	rounded	sub round	•
		_					lote - deneity -
Organic           plast.         OL         sitty clay low pla           plast.         OH         clay med. to high	poorly graded gravelly	SP SM	no fines little fines	sub angular well round	very dense angular rounded	dense very ang sub round	Soil density  Angularity  Note - density a

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## Geologic Boring Log

Boring ID	)	Client:			Project:			Location
MD		Puerto R	ico Sun C	Oil Co.	RCRA Facility Inv	estigation		Yabucoa, Puerto Rico
Project No			ologist/Eng		Driller			Drilling Contractor
		Gustavo	Felipe		Constancio Olivo			Jaca & Sierra
Date Star	ted	Date Com			Drilling Method			Sampler type
6/19/96		6/19/96			3.25" ID - 6.00" OI	D Hollow S	tem	2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow	PID			Soil Des	scription
bgl	USCS	very	Counts	(ppm)	Descri	iption made fr	om auger o	cuttings, unless otherwise noted.
(ft.)	Symbol	(per 24")	(6" each)	-	. E	(grain size,	sorting, m	oisture, color/hue etc.)
0	SM			0	0-2 ft Sand and organic r	ich soil, loc	sely pac	ked spoon, little gravel
]				ŀ	and rock fragments, no v	isible conta	mination	, Dry throughout,
					Hue 7.5 Y 4/3 brown.			
1					ł			
1 1		<b>!</b>				•		
2	SM	ł		0	2-4 ft Same as above no	visible cont	aminatio	n, dry throughout.
		•						
					ā			
3								
								**.
4	SM			180	4-6 ft Sand and silt - fine			
					fragments, well sorted, sl			visible contamination
					Dry thoughout, Hue 2.5/1	l dark bluis	h black.	
5								
				7				
						••		• • • • • • • • • • • • • • • • • • • •
6	SM			290	6-8 ft Sand and silt fine t			
					Strong product odor, visi	_	auct, mo	ist,
1 .					Hue 2.5/1 5B dark bluish	DIACK.		
7								
8	SM			314	8-8.5 ft Same as above, s	enturated at	R S A	
ľ	SIVI			314	Drill to 11.0 ft and install			oring well point
					screen interval from 6.0 -	-	•	
					Sciecii ilici vai noili 0.0 -	11.0 It ogi	•	
11					End of boring			
''					Cira vi voinig			
<b></b>				L	Well Construct	ion Details		
Casing ma	terial		Screen slo	t size	Screen Interval	Filter Pack		Cap Type
2" x sche		PVC	0.020		6-11 ft	No. 2 Silio	a sand	Watertight
Security of			3.020		Lock type:		(8)	
None					None			
Notes:								
					Well Develops	ment Data		
Date:		Technique	:				Volume p	urged:
7/19	9/96			using 5/	8" high density polyethyle	ene hose.		65 gallons
	_	p (°C)	SC (µ			SC - speci	fic condu	
Initial:				-		vater clear a		
Final:			_			oduct in we		
MAI							(*)	Prepared 6/11/97

#### **AMAJ**

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## Geologic Boring Log

								Main Dock Sump SWMU	33	
Sering ID		Client:		-	Project:			Location		
MD		Puerto R	ico Sun C	il Co.	RCRA Facility Investig	ation		Yabucoa, Puerto Rico		
roject No			ologist/Eng		Driller	···		Drilling Contractor	9	
· ojeti i i		Gustavo	_		Constancio Olivo			Jaca & Sierra		
ate Star	ted	Date Com			Drilling Method		-	Sampler type		
/19/96		6/19/96	<b>,</b>		3.25" ID - 6.00" OD Ho	ollow Stem	. :	2"x 24" Carbon Steel Split Spo	on	
	-		Blow	PID				ription		
Depth	11000	Reco-	!!		Description			ttings, unless otherwise noted		
bgl	USCS	<b>veгy</b>	Counts	(ppm)				isture, color/hue etc.)		
(ft.)	Symbol	(per 24")	(6" each)		0-2 ft Sand and organic rich					
0	SM			0	and rock fragments, no visible	son, noosei La contomis	y pack	Dry throughout		
					Hue 7.5 Y 4/3 brown.	ic containi	muon,	Dry unoughout,		
					Hue 7.5 Y 4/3 brown.					
1										
		!						and the state of the state of		
2	SM	į :	1	61	2-4 ft Same as above, sand a	nd silt, slig	ht pro	duct odor, Dry throughout		
		1			No visible contamination, Hu	ue chart #2	tor gl	ey 2.5/1 10 B.		
					Bluish black.					
3										
		1								
4	SM			301	4-6 ft Sand and silt - same as			oduct odor,		
			ŀ		Dry thoughout, Hue 2.5/1 da	rk bluish b	lack.			
		ŀ	•	ļ						
5	l				•					
	Į	1		1						
	İ	45		ĺ						
6	Mi			271	6-8 ft Sand and silt, same as	above, stro	ng pro	duct odor, no visible		
					contamination, Dry at 6 ft, m	oist at 8 ft	,			
		ŀ			Hue 2.5/1 5B dark bluish bla	ick.				
7				ļ						
		1		1	1					
	- 27									
8	SM			179	8-9 ft Saturated.					
•		l ₩			Drill to 12.0 ft and installed	temporary	monite	oring well point.		
		<del>                                     </del>	<del>                                     </del>	1	screen interval from 7.0 - 12					
	1		1			-				
11	1			1	End boring					
**										
	L				Well Construction	Details				
Casing m	nterio <sup>1</sup>		Screen slo	nt size		ter Pack		Сар Туре		
_		PVC		) inch	Desired	o. 2 Silica	sand	Watertight		
" x schedule 40 PVC 0.020 inch ecurity casing/manhole:			. 111011	Lock type:			<u> </u>			
None	casing/ma	BUVIE.			None					
	<del></del>				110220				<u> </u>	
Notes:										
					Well Developmen	nt Data				
		m			TO DETEROPHICE		olume p	proed:		
Date:	0.000	Techniqu		nais s É	/Of high density astrothylans		reme b	55 gallons		
7/1	9/96				/8" high density polyethylene pH   Notes: SC	nose.	condi			
	Ten	ıp (°C)	<del></del>	(S/cm)						
Initial:			<b></b> :		- Purge water		ı oug	alions,		
Final:	1		1	-	- Free produ	Free product in well				

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## Geologic Boring Log

		C41 :			The death		Location
Boring ID		Client:	t C C	NI C-	Project:	ion	Yabucoa, Puerto Rico
	S-3	Puerto R			RCRA Facility Investigat	IOII	Drilling Contractor
Project N	0.	AMAI Ge		ineer			•
5 . 6.		Gustavo			Constancio Olivo Drilling Method		Jaca & Sierra Sampler type
Date Star	ted	Date Com	pietea			C4	
6/19/96		6/19/96			3.25" ID - 6.00" OD Holle		
Depth		Reco-	Blow	PID			l Description
bgl	USCS	vегу	Counts	(ppm)			uger cuttings, unless otherwise noted.
(ft.)	Symbol	(per 24")	(6" each)				ing, moisture, color/hue etc.)
0	SM			0	0-2 ft Organic rich soil, few roo		
					some fine silt, backfill zone, no	visible o	contamination, Dry throughout
					Hue 7.5 Y 4/3 brown.		
1							
2	SM			0	2-4 ft Same as above по visible	contami	nation, dry throughout.
					319		
					~		
3							
J							
4	SM			lo	4-6 ft Same as above, no visible	e contam	ination, dry throughout.
•	5141			ľ			
	ŀ						
5	l						
3					35.		
	ŀ						
	MI			290	6.10 ft Sand - fine silty sand lit	ttle or no	gravel or rock fragments, slightly
6	МІ			250			contamination, Dry throughout,
					Hue chart #2 for gley 5/1 green		
					Hue chart #2 for grey 3/1 green	isii giay.	
Ţ							
•					10 ft Sand and silt mix, no visit	ole conta	mination Saturated
10	MI	▼		0			
					Hue #2 for gley 2.5/1 10 B blui		
	1				_	orary gro	oundwater monitoring well point
					at 20 ft bgl screen 10-20 ft		
11							
	L	<u></u>	L				
					Well Construction De		
Casing m			Screen slo		Screen Interval Filter		Сар Туре
	edule 40		0.020	inch		Silica s	and Watertight
Security o	esing/mai	shole:			Lock type:		
None					None		
Notes:					ű .		
Flush m	ounted						
					Well Development I	Data	
Date:		Technique	e:			Vol	ume purged:
	9/96			using 5/	8" high density polyethylene hos	se.	55 gallons
		p (°C)		S/cm)	pH Notes: SC -		
Initial:	1	- \		10	6.87 Purge water c		
Final:	<del> </del>			80	6.79		
			- ::	·	1		Prepared 6/11/97

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## Geologic Boring Log

								Main Dock S	ump SWMU 33
Boring ID	<del></del>	Client:			Project:		1	Location	
MD		Puerto R	ico Sun C	il Co.	RCRA Facili	ity Investigation		Yabucoa, Puerto	Rico
roject No			ologist/Eng		Driller		1	Drilling Contractor	1
		Gustavo	Feline		Constancio (	Olivo	]	Јаса & Ѕіетта	
ate Start	ed	Date Com			Drilling Metho	od		Sampler type	
/20/96		6/20/96			3.25" ID - 6.	00" OD Hollow St	em 2	2"x 24" Carbon :	Steel Split Spoon
Depth		Reco-	Blow	PID			Soil Desc	ription	
bgl	USCS	very	Counts	(ppm)		Description made fro	m auger cu	ttings, unless otherv	vise noted.
(ft.)	Symbol		(6" each)					isture, color/hue etc	
0	SP	()01 24 )	(0 000.)	0	0-2 ft Sand and sil				
١	Si					isible contamination			_
ì					Hue 7.5 Y 4/3 bro		, ,		
,						*****			
1									
	C.D.			0	2-4 ft Sand silt and	d large mibble sand	l and silt	mixture with ab	ındant large
2	SP			0		te rubble, backfill z			
		!				lue 7.5 Y 4/3 brown			•
					ויין אייטון אייטן אייטן אייטן	140 1.5 1 T/5 010W			
3									
	0.4			105	4 6 th Cond med to	fine sand and silt	mix little	e product odor. n	o visible
4	SM			105	contamination, Dr		1111A, 1141A	o product odor,	
i						y unoughout /1 10 BG dark gree	mich aras	u.	
_			l		Hue # 2 for giey 3	/ I TO BO dark gree	ansn graj	<b>7</b> -	
5				- V					
		1	ļ		İ				
		ł			6-8 ft Sand - fine	مسم المنتم المستمينات	ded done	e come product	odor
6	SM	1	ŀ	150.3	moist, no visible o		ucu, uciis	ic, some product	0001,
_			•			ley 3/1 10 BG darl	oreenist	h orav	
7		<b>V</b>			Hue chart #2 lor g	gey 3/1 10 BC dan	K Erccinsi	a gray.	
_		ł.		07.6	8-10 ft Sand and s	ilt came ac above	coturated	throughout stre	one product
8	SM			97.6	odor, no visible co		satur arcu	anorphought-	75 P. 44-44
	ŀ			ļ		/1 10 BG dark gree	nich orav	,	
	ŀ			Į .	Hue #2 for gley 3/	11 10 BO daik giec	ilisii giay	•	
					D-111 on 12 5 A one	d installed tempora	e, monito	oring well point	
	1	1			screen 7.5 ft - 12.5		ry mome	Amg wen ponn	
				ļ	Screen 7.5 R = 12.3	JA			
	Į.		1	<u> </u>	ŀ				
	}			1	Well Co	nstruction Details	·	<u> </u>	
2-2	atanta!		Screen slo	at size	Screen Interval	Filter Pack		Cap Type	2001
Casing m	ateriai edule 40	DVC		) inch	7.5-12.5 ft			Watertight	S(*0
			0.020	, mich	Lock type:	1.0.2011			
-	:asing/ma	D4016;		-	None				
Vone					II TORE	<del></del>		E-	7
Notes:								ΕÏ	
					Well D	evelopment Data			
		Ter 1			WEIL D		Volume p	nrged:	
Date:	0/06	Techniqu		neina 6	8" high density po			55 gallons	
7/1	9/96		<del></del>	using 3/	pH	Notes: SC - speci			
T - 141 - 1-	1 em	ıp (°C)	<del> </del>			Purge water clear a			
Initial:	<del>-</del>		<del>                                     </del>		<del>                                     </del>	. MED MOUTO CITCAL O	00 Be		
Final:	<u></u>				<u> </u>	·			Prepared 6/11/97

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## Geologic Boring Log

								Main Dock Su	ımp SWMU 33
oring ID		Client:	<del></del>	-	Project:			Location	
MD		Puerto R	ico Sun C	il Co.	RCRA Faci	lity Investigation	Yabucoa, Puerto Rico		
roject No		AMAI Ge	ologist/Eng	ineer	Driller			Drilling Contractor	
		Nestor M	I. Rivera		Constancio	Olivo		Jaca & Sierra	
ate Start	ted	Date Com			Drilling Meth	od		Sampler type	
/2/96		8/2/96			3.25" ID - 6.00" OD Hollow Stem 2"3			2"x 24" Carbon Steel	Split Spoon
Depth		Reco-	Blow	PID		,	Soil Des	cription	
bgl	USCS	very	Counts	(ppm)		Description made fro	m auger c	uttings, unless otherwise no	rted.
(fl.)	Symbol		(6" each)					oisture, color/hue etc.)	
				248		e sand throughout, is installed temporary ountered at 9 ft			
Casing m		NIG.	Screen sk		Screen Interval	onstruction Details Filter Pack No. 2 Silic	·	Cap Type Watertight	71
	" x schedule 40 PVC		0.020	) inch	5-15 ft	No. 2 Silic	a sand	watertight	<del></del>
ecurity casing/manhole:					Lock type:				
lone					None		-1		<del></del>
iotes:	Grout C	)-1 ft bgl	- Bent	onite sea	1 1-3 ft bgl - F	ilter pack 3-15 ft by	gi		
									<del></del>
					Well I	Development Data			
Date:		Techniqu	e:		.10		Volume j	ourged:	
	2/96			using 5/	8" high density po	lvethylene hose.	<u></u>	15 gallons	
Ø/ I			<del></del>		pH	Notes: SC - speci	fic cond		
		np (°C)		(S/cm)	<u> </u>	Free product in we			
nitial:		32.2	. 1	680	6.59	rice product in we	-		
Final:	1 3	31.8	1 6,	190	6.60	ļ			

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### Geologic Boring Log

								Main Dock Sump SWMU 33			
Boring ID		Client:			Project:			Location			
	S-6		ico Sun C			ility Investigation	1	Yabucoa, Puerto Rico			
Project No	D.		ologist/Eng	ineer	Driller			Drilling Contractor			
			1. Rivera		Constancio			Јаса & Ѕіетта			
Date Start	ted	Date Com	pleted		Drilling Meth	Sampler type					
8/2/96		8/2/96			3.25" ID - 6.00" OD Hollow Stem 2"x 24" Carbon Steel Split Spoon						
Depth		Reco-	Blow	PID	i	Soil Description					
bgl	USCS	very	Counts	(ppm)	ļ	Description made	from auger	cuttings, unless otherwise noted.			
(ft.)	Symbol	(per 24")	(6" each)			(grain siz	e, sorting, π	noisture, color/hue etc.)			
				198	No splitspoon sa Cuttings were fir Drill to 15 ft and Groundwater end Free product in c	ne sand throughou installed tempora countered at 9 ft	-	_			
					11110		1				
			-			nstruction Detai		la T			
Casing ma			Screen sto		Screen Interval	Filter Pac		Cap Type			
2" x schedule 40 PVC 0.020 inch Security casing/manhole:			ınch	5-15 ft	[No. 2 Si	lica sand	Watertight				
-	asing/man	bole:			Lock type:	€					
None					None						
Notes:	Grout 0	2 ft bgl	- Bent	onite 1-3	ft bgl - Filter	pack 3-15 ft					
					Well D	evelopment Data					
Date: Technique:						Volume	purged:				
8/12	2/96			using 5/	8" high density p	olyethylene hose.		15 gallons			
3/12		p (°C)	SC (µ		pH	Notes: SC - spe	cific cond				
Initial:		3.6	8,0			Free product in v					
		3.3	7,3		6.73	. Ice product iii v					
Final:	3.	ر.ر	1,3	JU	0.73	·					

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#### Well Log

Main Dock Sump SWMU 33 Page 1 of 2 Location: Project: Yabucoa Puerto Rico RCRA Facility Investigation Puerto Rico Sun Oil Company MDS-6R Drilling contractor: AMAI Geologist/Engineer: Driller Project No.: **Jaca & Sierra** Constancio Olivo Gustavo Felipe Drilling Method: Date Started: Date Completed: 3.25" ID - 6.00" OD Hollow Stem Auger None 8/15/96 8/15/96 Soil Description USCS Blow Depth Descriptions made from auger cuttings unless otherwise noted PID symbol Counts bgl Well Construction Recovery (grain size, \*\* hue/color, moisture, sorting etc.) (6" ea.) (per 24 ") (ppm) 0-2 ft Sand and organic rich soil, no visible contamination Dry 0 SM Hue 7.5 Y 4/3 Brown 2 2-4 ft Same as above, slight hydrocarbon odor, dry throughout SM Hue 7.5 Y 4/3 Brown 4-6 ft Fine sand and silt mix, strong product odor, visible free prduct in cuttings SM 175 Dry, Hue chart #2 for gley 2.5/1 5B dark greenish gray 10 6-8 ft Same as above, Dry, visible free product, strong product odor, SM 195.2 12 Hue chart #2 for gley 2.5/1 5B dark greenish gray 14 8-10 ft Fine sand and some silt, visible contamination, visible free product SM 375 16 Little or no gravel or coarse sand, Saturated at 10 ft 18 Drill to 25ft and install recovery well, Screened interval 4.5- 19.5 ft 20 22 24 Key to well construction Bottom of borehole Well casing Standing W.L. End cap Bentonite slurry Screened interval

Filter pack

Land surface

Security casing

Concrete

611 Broadway Suite 907 G New York, New York 10012

Well Log Main Dock Sump SWMU 33 (continued) Project number Project: Location Client: **RCRA Facility Investigation** bucoa, P.R. Puerto Rico Sun Oil Company **PPM** Soil Description Blow **USCS** Reco-Depth Descriptions made from auger cuttings unless otherwise noted very Counts (ppm) Symbol bgl (grain size, \*\* hue/color, moisture, sorting etc.) (6"ex.) Time (ft.) (ppm) (per 24") Well Construction Details Bettom Well cap type Screen slot size Filter pack Casing material Well point No. 2 Silica Sand Watertight 4" x schedule 40 PVC 0.020 inch Lock type: Security easing/manhole: American keyed-alike (aluminum body) Standing 36" steel security casing Votes: Well Development Data Volume purged: Technique: Date: Centrifugal pump using 5/8" high density polyethylene hose. SC - specific conductance SC (µS/cm) pН Notes: Temp (°C) No product in well at time of develpment 6.47 9,960 25 Initial: 6.86 25 Final: 16,740 Soil Descriptions Silt & Clay Sym Gravel Sym Size (mm) Type GW well graded gravel Inorganic no fines Medium Coarse ML silts and very fine sand low plast. little fines GP poorly graded gravel 19-75 4.8-19 Gravel CL gravelly,sandy,silty clay low plast. .43-2.0 .08-.043 some fines GM sand, silt, gravel mix 2.0-4.8 Sand MH micaceous/diatomaceous high plast. GC sand,clay,gravel,mix Silt & clay <.08 some fines СН high plasticity clay high plast. loose med. dense very loose Soil density Organic SW well graded gravelly very dense no fines dense

SP

SM

SC

little fines

some fines

some fines

poorly graded gravelly

silty-sand sandy-silt

sand clay mixture

silty clay low plasticity

clay med. to high plasticity

humus,swamp soils, organic

OL

ОН

PT

\*\*Hue and color based on MUNSELL Soil color charts

low plast.

high plast.

Peat

gularity

ungular

rounded

Source Unified Soil Classification System.

very ang.

sub round

Note - density also in blows/foot above

sub angular

well round

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## Geologic Boring Log

								Main Dock Sump SWMU 33		
Boring 1D		Client:			Project:			Location		
MD	S-7		ico Sun C			ility Investigation		Yabucoa, Puerto Rico		
Project No	D.	AMAI Ge	ologist/Eng	ineer	Driller			Drilling Contractor		
		Nestor M	1. Rivera		Constancio			Jaca & Sierra		
Date Start	ted	Date Com	pleted		Drilling Meth	hod		Sampler type		
3/1/96		8/1/96			3.25" ID - 6	6.00" OD Hollow S	tem	2"x 24" Carbon Steel Split Spoon		
Depth		Reco-	Blow	PID		• • •	Soil De	scription .		
bgi	USCS	very	Counts	(ppm)		Description made fi	rom auger	cuttings, unless otherwise noted		
(ft.)	Symbol	(per 24")	(6" each)			(grain size	, sorting, m	noisture, color/hue etc.)		
					coarse, composed Hue 10 YR 5/6 y greenish gray gle Groundwater end Free product four	I. sand, slightly moid of quartz, mica, py ellowish brown, an ey #1 5/1 10 Y countered at 9 ft and in cuttings	yrite, and d gley #1	urated, sand ranges in size, from fine to I lithic fragments, roots, I 3/1 N very dark gray, to undwater monitoring well point		
						onstruction Details				
Casing ma			Screen slot		Screen Interval	Filter Pack		Cap Type		
	dule 40		0.020	inch.	5-15 ft	No. 2 Silic	a sand	Watertight		
•	asing/man	bole:			Lock type:					
None					None			<u> </u>		
otes:	Grout 0-	1 ft bgl	- Bento	nite seal	1-3 ft bgl - F	ilter pack 3-15 ft by	gl			
					Well D	Development Data	· · · · ·	-		
	Technique:						Volume p	urged:		
ate:		Technique	:		/8" high density polyethylene hose.					
	2/96	Technique Centrifica		using 5/1	8" high density no	lvethylene hose		15 gallons		
Pate: 8/12		Centrifug	al pump				c conduc	15 gallons		
	Tem			S/cm)	pН	lyethylene hose.  Notes: SC specifi Free product in we				

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### Geologic Boring Log

Page 1 of 2

Page 1 0						Minim Dock Sump SwMIO 33
Boring ID		Client:			Project:	Location
	)S-8		ico Sun C		RCRA Facility Investigation	Yabucoa, Puerto Rico
Project N	0.	AMAI Ge	ologist/Eng	gineer	Driller	Drilling Contractor
		Gustavo			Constancio Olivo	Jaca & Sierra
Date Star	ted	Date Com	pleted		Drilling Method	Sampler type
8/7/96		8/7/96			3.25" ID - 6.00" OD Hollow Stem	2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow	PID	Soil D	escription
bgl	USCS	very	Counts	(ppm)	1	r cuttings, unless otherwise noted
(ft.)	Symbol	(per 24")	(6" each)			moisture, color/hue etc.)
0	SP	18"	7	0	0-2 ft Backfill zone very dry sandy, poorly	
Ů	, "	''	′	ľ	Hue 2.5 Y 6/2 light brownish gray	5.0000, 110 1131010 0011111111111111111111
	•	ļ		l	i luc 2.5 1 0/2 light blownish gray	
Ι, Ι	ŀ					
1	ŀ					
		·				
2	SP	19"	3-4-4-9	1.3	2-4 ft Backfill zone very dry sand and grav	el, same as above.
					Hue 2.5 Y 6/2 light brownish gray	
1				-		
3						
i l						
4	GM	0"		0	4-6 ft No sample (large gravel)	
		·				
5						
						68
	63.4	23"	5-8-7-7	0.7	6 9 6t ) fadium to fine and annu hands of a	ilt some smale and roak
6	SM	23	3-8-7-7	0.7	6-8 ft Medium to fine sand, gray bands of s	_
i					fragments, Dry, Hue 7.5 YR 6/3 light brown	n.
7						11
1						
8	SM	24"	7-9-7-6	0	8-10 ft Top of spoon (12")Medium to fine s	sand and silt, same as above,
					little or no coarse sand or gravel, Dry	
					Hue 10 YR 3/3 dark brown	
9					Bottom of spoon (4") Hue 10 YR 6/4 light	yellowish brown
		▼	J <sub>i</sub>			्र
10	SM	16 "	5-8	0	10-12 ft Medium to fine sand and silt, band	s of gray silt and med to fine sand.
] ^	2141	1.0	11-13		little or no coarse sand	G) Any and man to this pane.
			11-13		Saturated, no visible contamination,	
					Hue 10 YR 6/4 light yellowish brown	
				,	mue 10 1 K 0/4 light yellowish brown	
]					Partition 15 A and installed accompany of the	aning small maint. Compar internal
					Drill to 17 ft and installed temporary monito	oring well point. Screen interval
					7-17 ft	
	1					
1						
*						
17					End of boring	

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### Geologic Boring Log

(Continu	ued)	Page 2 o	f 2		_			Main Dock Sump SWMU 33		
Boring II		Client:			Project:			Location		
MI	OS-8	Puerto R	ico Sun C	Dil Co.	RCRA Fac	ility Investigation		Yabucoa, Puerto Rico		
Project N	o.		ologist/Eng		Driller			Drilling Contractor		
		Gustavo	Felipe		Constancio	Olivo		Jaca & Sierra		
Date Star	ted	Date Com			Drilling Met			Sampler type		
8/7/96		8/7/96			3.25" ID - (	6.00" OD Hollow S	tem	2"x 24" Carbon Steel Split Spoon		
Depth	T	Reco-	Blow	PID	T	·		scription		
bgl	USCS	very	Counts	(ppm)		Description made fr		cuttings, unless otherwise noted.		
(ft.)	Symbol	(per 24")	(6" each)	(PPIII)	1			oisture, color/hue etc.)		
(16.)		(per ser )	(0 00011)			(2				
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					Well Co	onstruction Details				
Casing m	aterial		Screen slo	t size	Screen Interval	Filter Pack		Cap Type		
	2 " x schedule 40 PVC 0.020 inc			inch	7-17 ਜ	No. 2 Silid	a sand	Watertight		
Security casing/manhole:					Lock type:			<u> </u>		
None					None					
Notes:		-			F					
. 10163.								· · · · · · · · · · · · · · · · · · ·		
					Wali r	Development Data				
		1			AA CII T		17-1			
Date:		Technique			081112		Volume p			
7/19	9/96				8" high density po	oiyethylene hose.		55 gallons		
	Tem	ip °C)	SC (μ	S/cm)	pH	Notes: SC - speci				
Initial:					-	Purge water clear a	ner 30 g	alions		
Final:			-	-						

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Geologic Boring Log

Barge Dock Sump SWMU 34

				00	Ocologic Doring	, 8	Barge Dock Sump SWMU 34			
Boring ID		Client:			Project:		Location			
BDS	S-1		tico Sun		RCRA Facility Inve	estigation	Yabucoa, Puerto Rico			
Project No	).	AMAI G	ologist/En	giocer	Driller		Drilling Contractor			
		Gustavo			Constancio Olivo		Jaca & Sierra			
Date Start	ed	Date Com	pleted		Drilling Method		Sampler type			
6/18/96		6/18/96			3.25" ID - 6.00" OI					
Depth		Reco-	Blow	PID		Soil Desc	-			
bgl	USCS	very	Counts	(ppm)	Descript		attings, unless otherwise noted.			
(ft.)	Symbol	(per 24")	(6" each)			(grain size, sorting, mo				
0	SM			0			tle or no gravel or rock fragments.			
i							ination, no product odor, Dry			
1		L			Hue 10.5 YR 4/3 brown.	Immunoassay sam	iples collected.			
		ple colle	cted	_		. 10				
2	SM			0	2-4 ft Sand and silt mix		o visible contamination.			
		<u> </u>			Immunoassay samples c	onected.				
3	San	ple colle	ected							
. 1	C) 4	_		200	A 6 th Sand and silt mix	came as above oro	oundwater encountered at 4 ft.			
4	SM			309	· · · · · · · · · · · · · · · · · · ·	· <del>-</del>	ut. Product odor in cuttings			
ا ہ		Ì			Hue 2.5 Y 4/2 Dark gray		ut. Froduct odor in caumgs			
5		•			Hue 2.5 1 4/2 Dark gra	yisii biowii.				
6		1			6-8 ft No description					
°					0-8 It No description					
7		1								
_ ′										
8	SM	ŀ			8-10 ft					
°	OI41	ŀ			0 20 %					
9		ļ								
		ŀ								
10	SM	•		169.4	10-13 ft Med to fine silt	y sand, coarser than	above. Hue 2.5 Y 4/2			
		ŀ			Dark grayish brown					
- 1 - [		-			İ					
		ŀ								
		ŀ			Drill to 13 ft and installe	d temporary monitor	oring point at 13 ft.			
					Screen from 3-13 ft bgl.					
▼										
13					End of boring					
ξi»					Well Construction Details					
							lo- m-			
Casing ma			Screen slo		Screen Interval	Filter Pack	Cap Type			
2"x Sche		_	0.020	inch	3-13 ft.	No. 2 Silica sand	watertight			
Security c				·	Lock type:	h. Chan alika				
	e grour	nd galvar	ized casi	ıng	American aluminum boo	iy (key-ailke)				
Notes:										
	<u></u>				Well Develop	nent Date				
		ia di			well Develop		numad.			
Date: Technique:					6/0" high dansin makesak	Volume	55 gallons			
7/22					5/8" high density polyeth	SC - specific cond				
I = 54° - 1		p (°C)	SC (µ		1 - 4		oment strong product odor.			
Initial:		25 25		20		ields 5 gpm + for 2				
Final:		2.3	1,0	20	- weny	iones a gpin + tot 2	Prepared 6/11/97			

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### Geologic Boring Log

Barge Dock Sump SWMU 34

					Geologic Doring	LUE	Barge Dock Sump SWMU 34			
Boring ID		Client:			Project:		Location			
BD	S-2		Cico Sun		RCRA Facility Inves	tigation	Yabucoa, Puerto Rico			
roject N	0.	AMAI G	cologist/En	gineer	Driller	13.	Drilling Contractor			
		Gustavo			Constancio Olivo	· · · ·	Јаса & Ѕіетта			
ate Star	ted	Date Con	pleted		Drilling Method		Sampler type			
5/18/96		6/18/96			3.25" ID - 6.00" OD		2"x 24" Carbon Steel Split Spoon			
Depth		Reco-	Blow	PID		Soil Des	-			
bgl	USCS	very	Counts	(ppm)	4 · · · · · · · · · · · · · · · · · · ·	-	uttings, unless otherwise noted.			
(ft.)	Symbol	Symbol	Symbol		<u> </u>		oisture, color/hue etc.)			
0	SM	20"	4-5-3-3	0	0-2 ft Sand - fine silty san					
					Dry loosely packed spoon					
					Hue 10.5 YR 4/3 brown. F	ull analysis and	Immunoassay samples collected			
1										
	San	aple coll	ected							
2	SM	20"	4-3-3-3	0	2-4 ft Sand and silt mix, sa		<del>-</del>			
		ł			No visible contamination,	•				
		ł			Full analysis and Immuno	assay samples co	llected.			
3										
	San	ple coll	ected	86						
				1000		• . • .				
4	SM	]		0		e product odor, (	Groundwater encountered at			
		1			6 ft					
		ł								
5										
6										
			l i							
		1								
7		1								
		1								
		_			<u> </u>					
8		<b>V</b>			Goundwater encountered					
					Drill to 11 ft and installed	temporary monit	toring point, screen 6-11 ft			
		j					2			
*										
11		<u> </u>	1	<u> </u>	End of boring.		<u> </u>			
					Well Constructio		<u> </u>			
Casing m			Screen slo			Filter Pack	Cap Type			
	edule 40		0.020	inch		No. 2 Silica sand	Watertight			
	asing/ma	inhole:			Lock type:		•			
one					none					
lotes:					~					
					Well Developme					
ate:		Techniqu				Volume				
7/9					5/8" high density polyethyl		60 gallons			
		p (°C)	SC (µ							
nitial:		25	1,1			ater clear after pu				
Final:	- 3	25	1,1	80	6.79 Product	odor in well Yiel	ld 5 gpm+			

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## Geologic Boring Log

Boring ID Client: Project:  BDS-3 Puerto Rico Sun Oil Co. RCRA Facility Investigation  Project No. AMAI Geologist/Engineer Driller  Gustavo Felipe Constancio Olivo  Date Started Date Completed Drilling Method  7/1/96 7/1/96 3.25" ID - 6.00" OD Hollow	Drilling Contractor							
Project No. AMAI Geologist/Engineer Driller Gustavo Felipe Constancio Olivo Date Started Date Completed Drilling Method	Drilling Contractor							
Project No. AMAI Geologist/Engineer Driller Gustavo Felipe Constancio Olivo Date Started Date Completed Drilling Method	_							
Date Started Date Completed Drilling Method								
Date Started Date Completed Drilling Method	Јаса & Siегта							
7/1/96 7/1/96 3.25" ID - 6.00" OD Hollow	Sampler type							
	Stem 2"x 24" Carbon Steel Split Spoon							
Depth Reco- Blow PID	Soil Description							
	rom auger cuttings, unless otherwise noted.							
"B"   " = " "	(grain size, sorting, moisture, color/hue etc.)							
0 SM 18" 2-2-3-4 0 0-2 ft Dig 3 feet by hand to clear	for underground utilities, Sample 1 ft offset							
	fill zone abundant rock fragments,							
no visible contamination, Dry thro								
,								
2 SM 24" 2-2-1-2 0 2-4 ft Gravel, sand and silt mix, s	2-4 ft Gravel, sand and silt mix, still backfill zone, abundant rock fragments,							
	Sandy silt, little or no larger sizes, Dry no visible contamination.							
93	no visible contamination, Hue 10.5 YR 4/3 brown.							
no visible contamination, riue 10.	J IR 415 Olowin.							
4 SM 20" 2-2-1-2 0 4-6 ft Sand and silt little or no gra	avel							
loosely packed spoon, no visible								
5 Hue 2.5 Y 4/2 dark grayish brown	n.							
(01)	a shows Dattern of croop (12"). Sand and silt							
	s above.Bottom of spoon (12") - Sand and silt,							
little or gravel, change in color, s	little or gravel, change in color, slightly darker than above.  Strong product odor, Dry throughout, moist at tip. Visible free product							
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1								
Sample collected in thin layers. Full analyses and I								
8-10 ft Sand med to fine, well gra								
visible free product in soil, Satura	ated, Hue chart #1 for gley 4/10 Y 10BG							
Dark greenish gray								
	m 191 . 4 C O 4 in . 4 11 . 4 company magnituding small maint at 16 A							
Drill to 16 ft and installed tempor	Drill to 16 ft and installed temporary monitoring well point at 16 ft							
screen 6-16ft								
16 End of boring								
Well Construction Deta	rils							
Cating material lacteen and are lacters received lacters	Silica sand Vacuum							
Z A John Caste 10 1 1 C								
Security casing/manbole: Lock type:  None American aluminum body (key-a	dike)							
	nino)							
Notes:								
W-II Danda Day	to .							
Well Development Dat								
Date: Technique:	Volume purged:							
7/19/96 Centrifugal pump using 5/8" high density polyethylene hos	se. 55 gallons							
	pecific conductance							
	fter development strong product odor.							
Final: 25 1,020 6.83 Sheen in purge	water drum.							

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## Geologic Boring Log

Barge Dock Sump SWMU 34

									Barge Dock Sump SWMU 34
oring ID		Client:		V		Project:	_	_	Location
34-0			ico Sun O		<u> </u>	RCRA Facility Investigation	tion		Yabucoa, Puerto Rico
roject No.			ologist/Engit	неег		Driller			Drilling Contractor Jaca & Sierra
		Gustavo				Constancio Olivo			Sampler type
ate Started		Date Com	pleted			Drilling Method 3.25" ID - 6.00" OD Holl	low Stem		2"x 24" Carbon Steel Split Spoo
/17/96		6/17/96	D1 I	DID		3.23 ID-0.00 OD Hon	Soil Desc		
Depth		Reco-	Blow	PID		<b>D</b>		-	
bgl	USCS	very	Counts	(ppm)		• 10)	_		unless otherwise noted.
(ft.)	Symbol	(per 24")	(per 6")				ize, sorting, mo		
0	SP	21"	6-2-2-2			Fine sand and silt mix, s			
			1			fill zone, no visible conta			
1				1	spoo	on, Hue 10.5 YR 4/3 brov	wn, immuno	assay	sample conected.
	Sample c			_			•		1
2	SP	19"	2-3-4-2	0	2-4 fi	t Sand and silt mix, same	as above, no	VISID	ole contamination,
						dry, Hue 2.5 Y 4/2 Dark	grayish brov	wn, in	umunoassay sample
3	Sample c	ollected	1		colle	cted.			
				ļ					
4				- 1	End (	of boring.			
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						Soil Descriptions*			
Туре		Size (mm	)	Gravel	Sym		Silt & Clay	Sym	
	Coarse	Medium	Fine	no fines	GW	well graded gravel		1	Inorganic
Gravel	19-75	<b>器翻译</b>	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML.	silts and very fine sand
714 7 01	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly, sandy, silty clay
<del>-</del> -	2.0-7.0		1	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous
and			<.08	some tines					
and ilt & clay	APPART.						high plast.	СН	high plasticity clay
and ilt & clay	very loose	loose	med. dense	Sand	sw	weli graded gravelly	high plast.	СН	high plasticity clay  Organic
and ilt & clay oil density	very loose dense	loose very dens	med. dense	Sand no fines	SW	well graded gravelly			Organic
iand tilt & clay foil density	very loose dense very ang.	loose very dens angular	med. dense e sub angular	Sand no fines little fines	SP	poorly graded gravelly	low plast	OL	Organic silty clay low plasticity
and ilt & clay oil density	very loose dense very ang. sub round	loose very dens angular rounded	med. dense e sub angular well round	Sand no fines	SP SM				Organic

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## Geologic Boring Log

					Geologic De	/	- 6	Barge Dock Sump SWMU 34						
Boring ID	<u> </u>	Client:	<u> </u>		Project:			Location						
BD:			tico Sun	Oil Co.	RCRA Facili	ty Invest	igation	Yabucoa, Puerto Ri	co					
Project N			ologist/En		Driller		1	Drilling Contractor						
			M. Rivera		Constancio C	livo	j	Jaca & Sierra						
Date Star		Date Con			Drilling Method									
	teu	8/5/96			3.25" ID - 6.0	el Split Spoon								
/5/96			Library 1	PID	3.23 10 - 0.0		ription							
Depth		Reco-	Blow			Description made from auger cuttings, unless otherwise noted								
bgl	USCS	very	Counts	(ppm)			rain size, sorting, moi							
(fl.)	Symbol	(per 24")	(6" each)			<del>.</del>	ant size, sorting, mor	30110, 00101711111 0-0.7						
						••								
			<b>!</b>		No splitspoon san									
			•		Cuttings show san	d throug	hout,	**	14 A bal					
			1		Drill to 15 ft bgl a	nd instal	led temporary mo	onitoring well point	at 14 it og:					
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			<u> </u>		Well Cor		n Detoils	····	-7					
								Con Truns						
Casing n			Screen s		Screen Interval	1	Filter Pack	Cap Type						
2" x sc	hedule 4	0 PVC	0.02	0 inch	4-14 ft bg		No. 2 Silica sand	Watertight						
Security	casing/m	anhole:			Lock type:									
None	-				None									
Notes:	Grout	0-0.5 ft l	ogi - I	Bentonit	e seal 0.5-2.0 ft bg	31 - F	ilter pack 2.0-14 i	ft bgl						
			_				60							
					Well De	velopm	ent Data							
	-	Trackerie					Volume	purged:						
Date:	2/0/	Techniq	Greet		5/8" high density	nolvethy		50 gallons						
8/1	2/96													
		np (°C)		uS/cm)	pH	NOTES:	SC - specific con	GEOGRAPO						
Initial:		25		940	6.78									
Final:	intai.					i								

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						AR, New York 10012				
				G	eolo	gic Boring Log		ъ	Sarge Dock Sump SWMU 34	
									ocation	
Boring ID		Client:				Project:	ion		Yabucoa, Puerto Rico	
34-0	4	Puerto K	ico Sun Oi	Compa	any RCRA Facility Investigation Yabucoa, Puerto Rico  Driller Drilling Contractor					
Project No.		amai Ge Gustavo	ologist/Engir	ięcr		Constancio Olivo			Jaca & Sierra	
Date Started		Date Com				Drilling Method			Sampler type	
6/21/96		6/21/96	picteo			3.25" ID - 6.00" OD Holl	ow Stem	- 2	2"x 24" Carbon Steel Split Spoon	
		Reco-	Blow	PID			Soil Desci	riptio	D <sub>.</sub>	
Depth	uscs	very	Counts	(ppm)		Descriptions made	from auger cut	tings, 1	unless otherwise noted.	
bgl		- 1	(per 6")	Фриц			e, sorting, mois			
(fL)	Symbol	(per 24")	3-3-4-4	0	0.811	Concrete coring				
0	SP	10	3-3-4-4			ft Sand and gravel mix, b	ackfill zone	. no n	roduct odor, Dry,	
_		1				SY 4/2 olive gray. Immun				
1				1	nue :	o 1 4/2 Olive gray. Hillian	oussay sam	<b>J10 00</b>		
		ple colle			- 46	Fine sand and silt mix,	Sama zaak f	ea cross	ents little or no gravel	
2	SP	18"	3-3-3-3	106.7	2-4 11	Fine sand and sut mix,	Some rock i	agiii	wahout Une #1 for alev	
ı				1	still in backfill zoe, some product odor, Dry throughout, Hue #1 for gley 10 Y 3/1 dark greenish gray, no visible contamination.					
3	Sam	ple colle	cted		10 Y	3/1 dark greenish gray, n	o visible coi	ntami	nation.	
			l						-t-E	
4	SM	19"	1-2-2-2	505.6	4-6 f	Fine sand and silt mix,	(micaceous)	no ro	ock fragments or gravel, below	
								ole co	ntamination, Dry throughout,	
5					Hue :	#2 for gley 4/2 dark bluis	h black.			
									.0	
6	SM	16"	2-2-2-2	523.8	6-8 f	t Fine sand- same as abov	e, strong pro	oduct	odor, Bottom (3") saturated	
, ,					with water and free product Top (9") stained with free product.					
7					Grou	ndwater encountered at 8	ft from grad	de,		
ļ '		i 🕳 l			Full	analysis and Immunoassa	y samples co	ollect	ed.	
8	Sam	ple colle	cted			of boring				
ľ	San	rpic conc				<b>3</b>				
l										
İ				İ	5.5					
		1								
	<u> </u>									
				-	l					
					l					
		1								
						Soil Descriptions*				
Туре		Size (mm	)	Gravel	Sym		Silt & Clay	Sym		
<del>//-</del> -	Coarse		Fine	no fines	GW	well graded gravel			Inorganic	
Gravel	19-75	S. E. S.	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
Sand	2.0-4.8	.43-2.0	.08043	some fines	-	sand,silt,gravel mix	low plast.	CL	gravelly, sandy, silty clay	
Silt & clay	7.0		<.08	some fines	_	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous	
		Selffer and	med. dense		1		high plast.	СН	high plasticity clay	
Soil density	very loose			no fines	sw	well graded gravelly			Organic	
	dense	very dens			1	poorly graded gravelly	low plast.	OL	silty clay low plasticity	
Angularity	very ang.	angular	sub angular		-	silty-sand sandy-silt	high plast.	ОН	clay med, to high plasticity	
	sub round	rounded	well round				Peat	PT	humus, swamp soils, organic	
Note - density	also in blow	s/foot abov	/e	some fines	_	sand clay mixture	<u> </u>	ļ. ·	,	

\* Source Unified Soil Classification System.

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## Geologic Boring Log

									e Dock Sump SWMU 34		
Boring ID		Client:	_			Project:			Location		
34-05			tico Sun C			RCRA Facility Investiga	tion		Yabucoa, Puerto Rico		
Project No.			ologist/Engi	ineer		Driller			Drilling Contractor Jaca & Sierra		
			A. Rivera			Constancio Olivo  Drilling Method			Sampler type		
Date Started 5/24/96		Date Com 6/24/96	ipieteu			3 25" ID - 6 00" OD Hol	llow Stem Ai		2"x 24" Carbon Steel Split Spoon		
		Reco-	Blow	PID	625	5.25 ID - 0.00 GD 110.	Soil Desc				
Depth	USCS		Counts			Description made			unless otherwise noted.		
bgi		very		(ppm)		_	ize, sorting, moi				
(ft.) 0	Symbol SM	(per 24") 18	(per 6") 2-8-3-19	8	0_2 f				st to wet, yellowish brown		
· · · · · · ·		ple Colle				(R 5/4). Sand composed					
1 h	Заш	pie Com				nents, ranging in size from					
•						unoassay (PAH) samples		5			
,	CM.	24	33-21			t. Same as above. Sand v		vároc	arbon odor.		
2	SM	24	33-21 17-11			unoassay sample collecte		,			
, 1			1/-11		1212111	mivassay sample concett					
3	6	ple Colle	otod								
_ ,	Sam	bie Coli	cicu		No sample collected.						
4					140 \$	ampie conected.					
_	ľ										
5											
	C) (	24	11-12	203	406	* Come or material of ()	2 ft Hydroca	arhon	odor and staining.		
6	SM	24	10-9	203		6-8 ft. Same as material of 0-2 ft. Hydrocarbon odor and staining. Full analyses and Immunoassay samples collected.					
a 18			10-9		LUII	anaiyses and minimuloass	ay sampies e	011001			
7		ple Colk	noted								
	28111		ecteu		Deill	ing groundwater encount	ered Boring	term	inated.		
8					ווווע	nig gromidwater encount	orou. Dornig	,			
	į										
				!							
				:							
					ŀ						
3211											
			- 1	Ĺ		0.00	·				
			<del>.</del>			Soil Descriptions*					
Туре		Size (mm		Gravel	Sym		Silt & Clay	Sym			
	Coarse	Medium	Fine	no fines		well graded gravel		1	Inorganic		
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand		
Sand	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	low plast.	CL	gravelly,sandy,silty clay		
Silt & clay			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	МН	micaceous/diatomaceous		
Soil density	very loose	loose	med. dense	Sand			high plast.	CH	high plasticity clay		
= *	dense	very dens	c	no fines	sw	well graded gravelly	<u> </u>		Organic		
Angularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity		
	sub round	rounded	well round		SM	silty-sand sandy-silt	high plast.	ОН	clay med. to high plasticity		
Note - density a		s/foot abov	re	some fines	SC	sand clay mixture	Peat	PT_	humus,swamp soils, organic		
						Unified Soil Classification Sy					

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## Geologic Boring Log

								Barge Dock Sump SWMU 34		
Boring ID	)	Client:		<u> </u>	Project:			Location		
BD:	S-5		Rico Sun			ty Investigation		Yabucoa, Puerto Rico		
roject No	0.	AMAI G	ologist/En	gineer	Driller			Drilling Contractor		
		Nestor I	M. Rivera	ı	Constancio C	Olivo		Јаса & Ѕіетта		
ate Star	ted	Date Con	pleted		Drilling Metho	d	<u> </u>	Sampler type		
3/5/96		8/5/96			3.25" ID - 6.	00" OD Hollow	Stem	2"x 24" Carbon Steel Split Spoon		
Depth		Reco-	Blow	PID			Soil Desc	ription		
bgl	USCS		Counts	(ppm)	,	Description made fro	om auger cu	ttings, unless otherwise noted.		
(ft.)	Symbol		(6" each)	dr		-	-	isture, color/hue etc.)		
				164.0		d throughout, lo		ely moist to saturated onitoring well point at 14 ft bgl.		
	_				Well Cor	struction Detai				
Casing m			Screen sle		Screen Interval	Filter Pac		Сар Туре		
2" x sch	edule 4	0 PVC	0.020	inch	4-14 ft bg	No. 2 Si	lica sand	Watertight		
Security (	casing/ms	nbole:			Lock type:			•		
None					None					
Notes:	Grout (	)-0.5 ft b	gl - B	entonite	e seal 0.5-2.0 ft bg	l - Filter pac	k 2.0-14 f	t bgl		
	<del></del>				Well De	velopment Data				
Date:		Techniqu	ıc:				Volume	purged:		
	2/96	Centrifi	ugal num	p using	5/8" high density p	olyethylene hos		50 gallons		
3/12		p (°C)		S/cm)	pH					
lnitial:		25		10	6.88	2,				
					6.78		<del></del> -	<del> </del>		
inal:	1	25	1,4	240	0.78					

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# Geologic Boring Log

								Barge Dock Sump SWMU 34					
Boring ID	1	Client:			Project:			Location					
BD5			tico Sun		RCRA Facili	ty Investigat		Yabucoa, Puerto Rico					
Project No	0.	AMAI G	ologist/En	gineer	Driller			Drilling Contractor					
		Nestor N	1. Rivera		Constancio C			Jaca & Sierra					
Date Start	ted	Date Con			Drilling Method			Sampler type					
3/5/96		8/5/96			3.25" ID - 6.0	00" OD Hol		2"x 24" Carbon Steel Split Spoon					
Depth	· ·	Reco-	Blow	PID			Soil Desci						
bgl	USCS	very	Counts	(ppm)	I	Description made from auger cuttings, unless otherwise noted.							
(ft.)	Symbol		(6" each)	4.				sture, color/hue etc.)					
					No splitspoon san Cuttings show san Drill to 15 ft bgl a	d throughou		ay onitoring well point at 13 ft bgl					
	1	<u> </u>		<u>}</u>	Well Cor	nstruction D	etails						
Casing m	aterial		Screen sl	ot size	Screen Interval	Filte	r Pack	Cap Type					
	edule 4	0 PVC		) inch	3-13 ft.	No.	2 Silica sand	Watertight					
	casing/m				Lock type:								
None	-zorug/ III				None								
Notes:	Grout	0-0.5 ft b	g] - F	Bentonit	e seal 0.5-2.0 ft bg	gl - Filter	pack 2.0-13 f	t bgl					
10163:	Ciout.	0.5 16 0	o		= =								
				1000	Well De	evelopment	Data						
	<u></u>	T :		68.	At Cli De	ciopinent	Volume	ourged.					
Date:		Techniq	ue:		# (OR 1. 1. 1	1 1		139 gallons					
8/1	2/96				ing over migrature.								
		ър (°C)_		S/cm)		pH Notes: SC - specific conductance							
Initial:		28		470	7.06	High yield	> >gpm						
Final:	1 2	28.5	1,3	330	6.92								

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## Geologic Boring Log

								Barge Dock Sump SWMU 34							
Boring II		Client:			Project:			Location							
	S-7		Cico Sun		RCRA Facil	lity Invest		Yabucoa, Puerto Rico							
Project N	lo.		ologist/En		Driller			Drilling Contractor							
		_	M. Rivera	l	Constancio (			Jaca & Sierra							
Date Star	ted	Date Con	pleted		Drilling Metho			Sampler type							
8/5/96		8/5/96			3.25" ID - 6	.00" OD I		2"x 24" Carbon Steel Split Spoon							
Depth		Reco-	Blow	PID			Soil Desc	<del>-</del>							
bgl	USCS	very	Counts	(ppm)		Description made from auger cuttings, unless otherwise noted.									
(ft.)	Symbol	_	(6" each)		1			isture, color/hue etc.)							
		•			No splitspoon sar Cuttings show sar Drill to 14 ft bgl a	nd throug		onitoring well point at 13 ft							
	<u></u>				Well Çoı	nstructio	Details								
Casing m			Screen slo		Screen Interval	-		Cap Type							
2" x sch	" x schedule 40 PVC 0.020 inch				3-13 ft	1	lo. 2 Silica sand	Watertight							
Security	casing/ms	nhole:			Lock type:		·								
None	-				None										
Notes:	Grout 0	-3"bgl	- Bento	onite sea			1.5 ft - 3 ft								
					Well De	evelopme									
Date:		Techniqu	ie:				Volume p								
8/12	2/96	Centrifu	ıgal pumı	using	5/8" high density p	polyethyle	ne hose.	70 gallons							
		p (°C)	SC (µ												
Initial:		25	6,4		6.78 Free product in well										
rmai:	Final: 25 5,860				6.83 High yield > 5gpm										

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## Geologic Boring Log

Barge Dock	Sump S	WMU	34
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									rge Dock Sump SWMU 34		
loring ID		Client:				Project:			Location		
34-0			ico Sun O			RCRA Facility Investigation	on		Yabucoa, Puerto Rico Drilling Contractor		
roject No.			ologist/Engi	neer					Jaca & Sierra		
			1. Rivera		COLDERSON COLO						
ate Started		Date Com	pleted			Drilling Method 3,25"ID - 6.00" OD Hollov	w Stem An		2"x 24" Carbon Steel Split Sp		
8/5/96		8/5/96	702	DEC I			Soil Descri	<del></del>			
Depth		Reco-	Blow	PID		Description made fro		-			
bgl	USCS	very	Counts	(ppm)		-					
(fl.)	Symbol	(per 24")	(per 6")				sorting, moist				
0	SP, SM	18	2-4-5-7		0-2 ft	. Gravelly sitlty sand to sa	na. Poorty	grade	d, loose, slightly moist.		
				ľ	Dark	brown (7.5YR3/2) to yello	wish brow	יסו) מי	Y R5/4). Sand composed		
1						artz, mica, pyrite, shell and	i lithic frag	ment	s, varying in size from		
				ŀ	fine t	o coarse grained.					
2	CL, SP	18	2-3-7-11		2-4 ft	. Gravelly sandy clay to sa	and. Poorly	grade	ed, stiff to		
_					loose	, dark brown (7.5YR3/3).	Sand comp	osed (	of quartz, mica, pyrite,		
3					shell	and lithic fragments varyi	ng in size fi	rom fi	ne to coarse. Gravel		
,						osed of granodiorite.	-				
	SM	19	8-9-8-8			. Sand. Poorly sorted, loo	se, moist to	satu	rated, dark brown		
4			8-3-6-0		/7 5V	TR3/3) to vellowish brown	(10YR5/4)	). San	d composed of quartz, mica,		
_	Sample c	onecteu	l 1		(1.JI	, shell and lithic fragment	s varving it	n size	from fine to coarse.		
5						nalyses and immunoassay					
						manyses and minimioassay ng groundwater encounter					
6					וווחט	ng groundwater encounter	cu. Doiling	(CI III	nacc.		
				ä		73					
	<u>l</u>	<u> </u>	<u> </u>			Soil Descriptions*					
Туре		Size (mm	)	Gravel	Sym		Silt & Clay	Sym			
- V F -	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic		
Gravel	19-75		4.8-19	little fines	GP	poorly graded gravel	ow plast.	ML	silts and very fine sand		
	2.0-4.8	.43-2.0	.08043	some fines	GM	sand,silt,gravel mix	ow plast.	CL	gravelly,sandy,silty clay		
							nigh plast.	мн	micaceous/diatomaceous		
Sand	2.0-7.0		< 0.8	some fines		Parin'cial/Krasciting is					
Sand Silt & clay			<.08	some fines	00			СН	high plasticity clay		
Sand	very loose	loose	med. dense	Sand			nigh plast.	СН			
Sand Silt & clay		loose very dens	med. dense	Sand no fines	sw	well graded gravelly	nigh plast.		Organic		
Sand Silt & clay	very loose	loose	med. dense se sub angular	Saud no fines little fines	SW SP	well graded gravelly poorly graded gravelly	nigh plast.	OL	Organic silty clay low plasticity		
Sand Silt & clay Soil density	very loose dense	loose very dens	med. dense	Sand no fines	SW SP	well graded gravelly poorly graded gravelly silty-sand sandy-silt	nigh plast.		Organic		

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## Geologic Boring Log

									arge Dock Sump SWMU 34			
Boring ID		Client:				Project:			ocation			
34-0			ico Sun O			RCRA Facility Investigat	tion		Yabucoa, Puerto Rico Drilling Contractor			
roject No.			ologist/Engi	neer								
			1. Rivera			Constancio Olivo			Sampler type			
ate Started		Date Com	pleted			Drilling Method	low Stem An					
8/5/96		8/5/96	- T	DID.	3.25" ID - 6.00" OD Hollow Stem Auger 2"x 24" Carbon Steel Split Sp PID Soil Description							
Depth		Reco-	Blow	PID	Description made from auger cuttings, unless otherwise noted.							
							from auger cuu e, sorting, mois					
(ft.)	Symbol	(per 24")	(per 6")		0.0.0							
0	SM	21	2-5-8-12		0-2 ft. Sand. Poorly graded, loose to medium dense, slightly moist, br							
				ĺ	(10YR4/3) to very dark gray (10YR3/1). Sand composed of quartz, mica, pyrite, shell and lithic fragments varying in size from fine to coarse.							
1				1	pyrite	e, shell and lithic tragmer	its varying it	1 SIZE	from tine to coarse.			
				1								
2	SM	8	9-7-7-7		2-4 ft	t. Same as above.						
				ļ								
3				- 1								
									_			
4	SM	24	6-5-6-7		4-6 ft	t. Sand. Poorly graded, lo	oose, slightly	mois	t to saturated,			
	Sample c	ollected			black (5Y2.5/1) to gray (5Y6/1). Sand composed of quartz, mica, pyrite,							
5		▼				and lithic fragments vary						
		· ·				analyses and Immunoassa						
6					Borir	ng terminated. Groundwa	ater level end	counte	ered at 5 ft.			
•				1		-						
		Ì										
		Ì	1.5									
		ļ .										
		1										
			i i									
		1										
			1 1	'	1							
		l										
			<u> </u>			Soil Descriptions*						
Type		Size (mm	)	Gravel	Sym	· · · · · · · · · · · · · · · · · · ·	Silt & Clay	Sym				
-,,,-	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic			
Gravel	19-75		4.8-19	little fines	-	poorly graded gravel	low plast.	ML	silts and very fine sand			
Sand	2.0-4.8	.43-2.0	.08043	some fines	_	sand,silt,gravel mix	low plast.	CL	gravelly, sandy, silty clay			
	2.0-4.6	.43-2.0	<.08	some fines	-	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous			
Silt & clay		1,	med. dense		<del>  ~~</del>		high plast.	СН	high plasticity clay			
Soil density	very loose				ew	well graded gravelly			Organic			
	dense	very dens		no fines	SW	well graded gravelly	low plast.	OL	silty clay low plasticity			
Angularity	very ang.	angular	sub angular		<del>\</del>	poorly graded gravelly		OH	clay med. to high plasticity			
		I dad	well round	some fines	SM	silty-sand sandy-silt	high plast.	וטמ	ciay mea. willigh productly			
Note - density	sub round	rounded	<del></del>	some fines		sand clay mixture	Peat	PT	humus,swamp soils, organic			

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## Geologic Boring Log

**Background Soil Sampling** 

					- 0				ackground Son Sampung		
oring ID		Client:	- 0"	_		Project: RCRA Facility Investigati	ion	Locatio	oa, Puerto Rico		
BG-0	01	Puerto Ri	co Sun Oil	Company	Driller Drilling Contractor						
roject No.		AMAI Geo: Gustavo I	logist/Engine	er	Constancio Olivo Jaca & Sierra						
ate Started		Date Comp			- 10 mg	Orilling Method		Sample	r type		
/10/96		7/10/96			000	3.25" ID - 6.00" OD Holk	ow Stem Aug	er 2"x 24	" Carbon Steel Split Spoon		
Depth		Reco-	Blow	PID	201		Soil Descr				
-	uscs	very	Counts	(ppm)	- 1						
bgl	Symbol	(per 24")	(per 6*)	- CFFILITY			ize, sorting, mois				
(ft) 0	SM	18"	2-2-3-2	0	0-2 ft	Sand and silt mix, some					
U	Sample c					no visible contamination					
	Sample	Oncered				10 YR 5/3 brown	7970				
1						Metals sample collected					
1				- 1		9.					
			- 1			- F					
•	0.4	22"	1-3-1-1	0	2_4 ft	Sand and silt mix, little o	or no gravel. I	" band of	clay at		
2	SM	22	1-2-1-1			m top of spoon, no visible					
				- 1	loose	soft, Hue 10 YR 5/4 yell	owish brown				
_		-3343				Metals sample collected					
3	Sample c	onected			14191	1.10mm omnibre actioned					
					End o	f boring.					
4					Elia o	i oomig.					
			8								
	1			8							
			1								
		1									
		1									
	1										
	1										
	1										
				3	1						
	1										
	1				34						
	1										
				kc ===3	L.,						
						Soil Descriptions*					
Туре		Size (mm)		Gravel	Sym		ilt & Clay S	m	P. C. C. C.		
	Coarse	Medium	Fine	no fines	-	well graded gravel			Inorganic		
Gravel	19-75	2000	4.8-19	little fines	GP	puest, grant grant	w plast.	_	silts and very fine sand		
Sand	2.0-4.8	43-2.0	.08043	some fines	GM		w plast. C		gravelly,sandy,silty clay		
Silt & clay	2.00		<.08	some fines	GC	sand,clay,gravel,mix hi	igh plast. M	н	micaceous/diatomaceous		
Soil density	very loose	loose	med. dense	Sand		h	igh plast. C	н	high plasticity clay		
wearing	dense	very dense	-	no fines	sw	well graded gravelly			Organic		
Angulasitu	very ang	angular	sub angular	little fines	_		ow plast.	L	silty clay low plasticity		
Angularity	sub round	rounded	well round	some fines	-	7		Н	clay med, to high plasticity		
			1.TOIT .OUIIG	some fines	-		eat P	т	humus,swamp soils, organic		
Note - density	les in blace-	AAT BEAUL									

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### **Geologic Boring Log**

**Background Soil Sampling** 

									Background Soil Sampling			
Soring ID		Client:				Project:	_		Location			
BG-	02	Puerto Ri	ico Sun Oil	l Company		RCRA Facility Investig	gation		Yabucoa, Puerto Rico			
roject No.		AMAI Geo	iogist/Engine	eer		Driller			Drilling Contractor			
		Nestor M				Constancio Olivo			Јаса & Ѕіепта			
ate Started		Date Comp	leted		Drilling Method Sampler type 3.25" ID - 6.00" OD Hollow Stem Auger 2"x 24" Carbon Steel Split Spoon							
/22/96		7/22/96				3.25" ID - 6.00" OD H						
Depth		Reco-	Blow	PID			Soil Des	-				
bgl	USCS	very	Counts	(ppm)								
(ft.)	Symbol	(рет 24")	(per 6")				n size, sorting, m					
0	ML/SP	18 "	2-3-3-3			Top (2") Top soil desc						
	Sample c	ollected			Hue I	0 YR 4/3 brown to ver	y dark brown	10 Y	R 2/2			
					Middle (14") Sand, loose slightly moist, fine to very coarse,							
1						0 Y 4/3 dark brown to						
1						m (2") Clay, stiff slight						
						Metals sample collecte			•			
_	61	2011	7070					d vari	es in size from fine to coarse,			
2	CL	20"	7-8-7-9	0								
					composed of quartz, mica, pyrite, and lithic fragments.  Hue 5 YR 4/4							
3	Sample o	ollected			MSL	Metals sample collecte	:a					
				0								
	ŀ	1										
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				L	<u> </u>		<del> </del>					
						Soil Descriptions*		- 22				
Туре		Size (mm)		Gravel	Sym		Silt & Clay	Sym				
	Coarse	Medium	Fine	no fines	GW	well graded gravel	<u> </u>		Inorganic			
iravel	19-75		4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand			
and	2.0-4.8	43-2.0	.08043	some fines	GM	sand, silt, gravel mix	low plast.	CL	gravelly,sandy,silty clay			
			<.08	some fines	GC	sand,clay,gravel,mix	high plast.	мн	micaceous/diatomaceous			
ilt & clay	<b>27.23</b> 3				1 30	Securitaria Personal		СН	high plasticity clay			
oil density	very loose	loose	med, dense	Sand	<u> </u>		high plast.	СП				
	dense	very dense		no fines	sw	well graded gravelly			Organic			
ngularity	very ang.	angular	sub angular	little fines	SP	poorly graded gravelly	low plast.	OL	silty clay low plasticity			
	sub round	rounded	well round	some fines	SM	silty-sand sandy-silt	high plast.	ОН	clay med, to high plasticity			
			<u> </u>					7				
lote - density	also in blowe	ont above		some fines	sc	sand clay mixture	Peat	PT	humus,swamp soils, organic			

611 Broadway Suite 907G New York, New York 10012

## Geologic Boring Log

**Background Soil Sampling** 

									Background Soil Sampling	
ring LD		Client:	750 750			roject:			cation abucoa, Puerto Rico	
BG-0	03		co Sun Oil			CRA Facility Investig	ation		illing Contractor	
oject No.			ogist/Engine	er		Oriller			ca & Sierra	
		Nestor M.		Constancio Circo						
nte Started		Date Comp	leted		On OAR Corbon Steel Split Sp					
/22/96		7/22/96		- T	-	Pripod	Soil Des			
Depth		Reco-	Blow	PID					nless otherwise noted.	
bgl	USCS	very	Counts	(ppm)						
(fl.)	Symbol	(per 24")	(per 6")		- 25	(grain	size, sorting, m	oisture, c	otot/flue etc.)	
0	ML	18 "	2-4-6-6		D-2 ft					
	Sample o	ollected		1	Top so	oil described as sandy s	alt, stiff, sligr	itiy moi	SI,	
			1		Varyiı	ng in size from fine to o	oarse Hue I	) YK 4/.	3 Drown	
1	composed of quartz, mica, pyrite, an							c tragn	ents.	
			- 1	]1	MSL I	Metals sample collected	đ.			
			- 1						_	
2	CL/SP	16"	4-5-4-9	0	2-4 ft	Top (4") Clay, stiff, sli	ghtly moist,	compos	ed of quartz, mica,	
2	1 320		1	- 1	nvrite.	and lithic fragments.				
			1	l l	Middl	e (4") Sand, loose sligh	ntly moist, co	mposed	of quartz, mica, pyrite,	
3	Sample	ollected			and lit	thic fragments, varying	in size from	fine to	coarse,	
3	Sample	1110000			Botto	m (8") Clay, stiff, sligh	tly moist. Hu	e 10 YI	R 4/3 brown	
			8			Metals sample collected				
						f boring				
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						Soil Descriptions*				
Туре	1	Size (mm)		Gravel	Sym		Silt & Clay	Sym		
-,,p-	Coarse	Medium	Fine	no fines	GW	well graded gravel			Inorganic	
Gravel	19-75	建治域	4.8-19	little fines	GP	poorly graded gravel	low plast.	ML	silts and very fine sand	
	2.0-4.8	.43-2.0	.08043	some fines	-	sand, silt, gravel mix	low plast.	CL	gravelly,sandy,silty clay	
Sand Site it alon	2.0-4.8		<.08	some fines	-	sand,clay,gravel,mix	high plast.	MH	micaceous/diatomaceous	
Silt & clay	Brown and a second	P. S. Control Street, or S. Co.		Sand	+==		high plast.	СН	high plasticity clay	
Soil density	very loose	_	med dense		sw	well graded gravelly		-	Organic	
	dense	very dens		no fines	-		low plast.	OL T	silty clay low plasticity	
Angularity	very ang.	angular	sub angular	little fines		poorly graded gravelly		ОН	clay med to high plasticity	
	sub round	rounded	well round	some fines	-	silty-sand sandy-silt	high plast.	PT	humus,swamp soils, organic	
Note - density				some fines	SC	sand clay mixture				

611 Broadway Suite 907 G New York, New York 10012

## Geologic Boring Log

Dock Area

					Geologi	C Dolling Dog		Dock Area
Boring 1D		Client:			Project:			Location
A-1		Puerto R	ico Sun C	oil Co	RCRA Facil	ity Investigation		Yabucoa, Puerto Rico
roject No.		AMAI Ge	ologist/Eng	ineer	Driller			Drilling Contractor
		Gustavo	Felipe		Constancio (	Olivo		Jaca & Sierra
ate Starte	:d	Date Com	pleted		Drilling Metho			Sampler type
7/02/96	15.	7/02/96			3.25" ID - 6.	00" OD Hollow S	tem	2"x 24" Carbon Steel Split Spoon
Depth		Reco-	Blow					
bgl	USCS	very	Counts	PID			Soil Des	•
(ft)	Symbol	(per 24")	(6" each)	(ppm)				oisture, color/hue etc.)
0	SM		-	0.0				avel, or rock fragments,
					Dry, No visible co	entamination, Hu	10 YR 5	/3 brown
1								
						*.**.1		
2	SM	[		0.0	2-4 ft Same as abo	ove, no visible co	ntaminatio	on
_		1						
3								
	63.4			0.0	4-6 ft - Same as a	hove no visible o	Ontamina	tion.
4	SM			0.0	- Same as a	0010, 110 1131010	O.,	
5						ψ.		
,								
6	SM	]	<b>i</b> '	0.0	6-8 ft - Same as a	bove, Slightly fir	er grains,	no visible contamination
	0	1				. •	_	
7		1						
					İ			
8	SM			0.0				rger grains, no visible contamination,
- 1				1	Saturated, Hue ch	art #1 for gley 10	Y 4/1 dau	rk greenish gray
9		<u> </u>						
						install temporary	monitorin	g well point at 17 ft
		ŀ			screen 7-17 ft			
				1				
		1						
<b> </b>		1						
					1			
↓				-				
17		İ			End boring			
	<del></del>		1		Well Con	struction Detail	3	
Casing ma	terial	<u> </u>	Screen slo	t size	Screen Interval	Filter Pac		Сар Туре
	40 PVC		0.020	inch	7-17 ft	No. 2 Sil	ica sand	Watertight cap
	sing/manh	ole:	· · · · · · · · · · · · · · · · · · ·		Lock type:			
3375		anized ste	el casing		American			
Notes:	- <del></del>							
	<u>-</u> -				Well De	velopment Data		
Date:		Techniqu	e:					Volume purged:
7/19/96				using 5	/8" high density po	lyethylene hose.		55 gai
	Tem	(°C)		S/cm)		Notes: SC- spec	ific condu	ictance
Initial:		25	4	50	6.17	Water clear after	purging	
minai: i								

	Shell Chemical	rai	<u> </u>	ya III	c 3up	piem	emai	RFI Boring:	<u>39-01</u>	Pg. <u>1.</u> of _	_1_
Drilling Co:									Date Started:	4/15/03	_
Location:								2-inch macrocore	_ Date Completed:	4/15/03	_
	Yabucoa, Puerto Ri	ico						Top of PVC Casing		N. Rivera	_
Surface Elev.:		<del>-</del>	ا ما		. N	leas. F	t. Elev:	<u></u>	Reviewed by:	M. Stein	
	×	BLOWS/6 in.	RECOVERY (in)	PID (ppm)	SAMPLES	DEPTH (ft)	GRAPHIC LOG		DESCRIPTION		
2_			46	0.0	39-01 1.5-2.0	2 -		(0-46") gravelly, sandy, sitty C		wn.	C
NDERSON · M	ULHOLLAND & AS	SSO	CIA	TES	INC.				Water Level ATD	ft bç	
NDEKSON · M	Environ 110 C	nmer Corpo	ntal ( prate	Consu Park	Itants Drive	⊠s	<u>L</u> ample I	nterval	Water Level	ft bo	
$\Delta N$	Whit	te Pl	ains,	, NY 1	10604				Notes:	37	
/-	/ \ I		914	4-251-	-U4UU I						

Drilling Co: Location: SCY1 Sampler / Drop: Pabucoa, Puerto Rico Desc. of Meas Pt: Meas. Pt. Elev: Reviewed by: M. St.  Surface Elev.:  Desc. of Meas Pt: Meas. Pt. Elev:  Reviewed by: M. St.  One of PVC Casing Desc. of Meas Pt: Meas. Pt. Elev:  Desc. of Meas Pt: Meas. Pt. Elev:  Reviewed by: M. St.  One of PVC Casing Desc. of Meas Pt:	era ein
Surface Elev.:  Desc. of Meas Pt: Top of PVC Casing Logged by: N. Rh. St. Meas. Pt. Elev: Reviewed by: M. St. Meas. Pt. Elev: DESCRIPTION    Color is black with a wifer for meaning to the color is black with a wif	ein
Surface Elev.:  Meas. Pt. Elev:  Reviewed by:  M. St    Graph	ein
DESCRIPTION  46 0.0  39-03 1.0-1.5  (18-30") Same as above. Color is black with outfur fragments.	12
46 0.0 (0-18") sandy, silfy CLAY, brown, light yellow, hard, rock fragmen  0.0 39-03 1.0-1.5 (18-20") Same as above. Color is block with outton fragments	5.
1.0-1.5 (18.30°) Same as above. Color is black with outlier for amounts	
2 - 0.0   0.0   39-03   1.5-2.0   2 -     2 -	
(30-46") Same as above. Without sulfur fragments.	
Bottom of boring @ 4 feet.	
NDEDSON MULTIPOLI AND & ACCOCIATED INC	
NDERSON · MULHOLLAND & ASSOCIATES, INC. LEGEND Water Level ATD  Environmental Consultants  Sample Interval Water Level	ft bgl 💆
110 Corporate Park Drive	ft bgl 🛂
White Plains, NY 10604 914-251-0400 FAX: 914-251-1286	

	Shell Chemical	Ya	buç	oa Ir								
Drilling Co:								: Direct-push	· · · · · · · · · · · · · · · · · · ·			
Location:		f						2-inch macrocore				
Surface Elev.:	Yabucoa, Puerto R	ICO					neas M Pt. Elev	Top of PVC Casing	Logged by Reviewed by			
Outland Liev.	<del></del>	ء ا	Y (In)					•	Neviewed by	M. Stein		
		BLOWS/6 in.	RECOVERY (In)	PID (ppm)	SAMPLES	DEPTH (ft)	GRAPHIC LOG					
<del></del>		립	2	ਰ	δ	<u>                                     </u>		40 - 20 - 20	DESCRIPTION			
			46	0.0	BG-4 0.0-0.5	1	47 4	_roots.	AND/sandy SILT, dark brown, s	n=/3		
				İ	0.0-0.5	-		(3-46") SAND, mediun loose, shell, coral, gast	n to coarse grained, light gray, ropod fragments.	slightly moist;		
				0.0		-						
	¥9.				_							
2_					BG-4 1,5-2.0	2						
				0.0	_	-				ì		
-					ega V							
				0.0	BG-4 3.0-3.5					80		
4_    _						4_				i <del>š</del>		
								Bottom of boring @ 4 fe	et.			
	64											
										7		
NDERSON · M	ULHOLLAND & AS	SSC	CIA	TES,	INC.			<u>EGEND</u>	Water Level ATD	ft bgl		
	Enviror 110 C	orpo	orate	Park	Drive	⊠ s	ample	Intervai	Water Level Notes:	ft bgl		
Λ N Δ		te P		, NY 1 4-251					Notes.			
$M \sim 10^{-1}$	$4$ 1 $^{\dagger}$	FAX:	914	4-251	1286				4			

	Shell Chemical Y	abuc	oa In					BG-5	Pg. 1 of 1	
Drilling Co: Location:					_		Direct-push	Date Started:	4/16/03	
Location.	Yabucoa, Puerto Rice	0					Z-inch macrocore Top of PVC Casing	Date Completed: Logged by:	4/16/03 N. Rivera	
Surface Elev.:						t. Elev	the state of the s	Reviewed by:	M. Stein	
		BLOWS/6 in. RECOVERY (in)	PID (ppm)	SAMPLES	DEPTH (ft)	GRAPHIC LOG	D	ESCRIPTION		
				80.5 M			(0-4") organic soil, black, root			
		44	0.0	BG-5 0.0-0.5			(4-44") gravelly, sandy, sitly C granodiorite fragments.	LAY, light brown, slightly n	noist, stiff,	
2_			0.0	8G-5 15-20	2_					
4			0.0	BG-5 3.0-3.5	4_					
							Bottom of boring @ 4 feet.			
NDERSON · M	IULHOLLAND & ASS Environm 110 Cor White	nental ( rporate Plains	Consule Park NY 1 4-251	Drive 0604 0400	⊠ s		Interval v	Vater Level ATD  Vater Level lotes:	ft bg	

		cal Yal	buc	<u>oa In</u>				RFI Boring:	BG-6	Pg. <u>1</u> of <u>1</u>	_
Drilling Co:								· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
Location:		*						2-inch macrocore		4/15/03	
	Yabucoa, Puert	o Rico		_				Top of PVC Casing			
Surface Elev.:						vieas. F	Pt. Elev	<u> </u>	Reviewed by:	M. Stein	<del>, -</del>
		نے ا	RECOVERY (in)								l
		BLOWS/6 In.	E	Ê	ES	€	ပ္				10000000
		§	형	PID (ppm)	SAMPLES	DEPTH (ft)	APH S				13
		BLC	R	E C	SA	l iii	GRAPHIC LOG	ı	DESCRIPTION		}
					BC 6			(0-6") Backfill: gravelly, silty			Γ
			46	0.0	BG-6 0.0-0.5	(]		moist, roots.		Į	ļ¢
					L	-		(6-46") silty CLAY, dark brow	n to brown, slightly moist, h	ard, Fe	þ
								concretions.		·	
				0.0		-				70	
					_					E:	
					BG-6 1.5-2.0	1					İ
2				_	1.5-2.0	2					!
				0.0	_	1 -1				1	
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		11		0.0	BG-6 3.0-3.5						
		11		İ	N						
4						4					
								Bottom of boring @ 4 feet.			_
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NDERSON M	ULHOLLAND &	ASSO	CIA	TES.	INC.		Į.	EGEND	Water Level ATD	ft bgl \(\sqrt{2}\)	Z
	Env	ironmen	tal C	onsu	Itants	⊠ sa			Water Level	ft bgi	- 1
		0 Corpo Vhite Pla					-	<u></u>	Notes:		-
$\Delta N$			914	I-251-	0400						1
$\overline{-1}$	<u> </u>	FAX:	914	I-251-	1286						

	Project:	Shell Chemical	Yab	uc	<u>oa In</u>	c Sup	plem	ental	RFI Boring:	BG-7	Pg1_ of	1
	Drilling Co:	PACE				_ Đ	rilling	Method	Direct-push	Date Started: _	4/16/03	_
	Location:	SCYI				_ s	ample	r / Drop	2-inch macrocore Dat	te Completed: _	4/16/03	_
		Yabucoa, Puerto Ri	co			_ Des	ic. of N	<i>l</i> leas Pt	Top of PVC Casing	Logged by: _	N. Rivera	_
	Surface Elev.:		_			M	leas. I	Pt. Elev		Reviewed by: _	M. Stein	
			BLOWS/6 in.	RECOVERY (in)	PID (ppm)	SAMPLES	DEPTH (ft)	GRAPHIC LOG	DESCRIP	TION		USCS SYMBOL
		8.		46	0.0	BG-7 0.0-0.5			(0-12") Backfill: gravelly, sandy, silty C soft to stiff.	LÁY, light brown,	slightly moist,	CL
	2_				0.0	BG-7 1.5-2.0	2		(12-46") sandy, silty CLAY, light brown granodiorite fragments.	, gray, black Fe co	oncretions,	CL
	-	14				BG-7 √	-					
	4_				0.0	BG-7 3.0-3.5	4_		Bottom of boring @ 4 feet.			
				:							ii	
1.GDT 6/19/03		*.										
VELL SUTHERIGED AND	ANDERSON	110 WI	onme Corp nite F	ental orat Plain 9	Cons te Pari s, NY 14-25	6, INC. sultants k Drive 10604 1-0400 1-1286			LEGEND Water L Interval Water L Notes:	evel ATD		bgl ⊈ bgl ⊀

WELL SCYI-RFI.GPJ

Project:	Shell Chemical	Tat	ouc	oa ın	c Sup	piem	entai r	RFI Boring:	BG-8	Pg. <u>1</u> of _	1
Drilling Co:		–						Direct-push	Date Started:	4/16/03	_
Location:								2-inch macrocore	_ Date Completed:	4/16/03	-
	Yabucoa, Puerto Ri	ico						Top of PVC Casing	Logged by:	N. Rivera	-
Surface Elev.:		<del>_</del>	-		М	eas. F	Pt. Elev:		Reviewed by:	M. Stein	_
			RECOVERY (In)		ĺ						
		BLOWS/6 In.	F.	٤	ျူ	€	ပ				
		WS.	<u>&amp;</u>	PID (ppm)	SAMPLES	DEPTH (ft)	풀				
		E B	RE	8	SAA	Ä	GRAPHIC LOG	D	ESCRIPTION		
71 1					M			(0-46") SAND, medium to coaloose, shell, coral, gastropod,		lightly moist,	
			46	0.0	BG-8 0.0-0,5			loose, snell, coral, gastropod,	granodionte tragments.		
						-					
41				0.0		_					
				i	_					2021	
					BG-8 1.5-2.0					1	
2		П	İ		1.5-2.0	2				1	
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					H	4					
				0.0	BG-8 3.0-3.5	l					
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4						4					
							'	Bottom of boring @ 4 feet.			
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NDERSON · N	ULHOLLAND & A	SSC	CI/	TES	, INC.				Water Level ATD	ft bg	
	Enviror 110 C				Iltants Drive	⊠ s	ample I	1_	Water Level	ft bg	gi
$\Delta M_{\lambda}$	Whi		lains	s, NY	10604 -0400			ľ	Notes:		
	- N -			A.751	CONTROL 1					1945	

Project:	Shell Chemical	Yal	buc	oa In	<u>c Sup</u>	<u>plem</u>	<u>ental</u>	RFI Boring:	BG-9	Pg1_ of _	1_	
Drilling Co:		CE Drilling Method:						: Direct-push Date Started: 4/15/03				
Location:					_ Sa	mpler	/ Drop:	2-inch macrocore	_ Date Completed: _	4/15/03		
	Yabucoa, Puerto R	ico			_ Des	c. of M	leas Pt:	Top of PVC Casing	Logged by:	N. Rivera		
Surface Elev.:									Reviewed by: M. Steir			
		Ë	8Y (In)							1150	100	
	67	BLOWS/6 in.	RECOVERY (In)	PtD (ppm)	SAMPLES	DEPTH (ft)	GRAPHIC LOG				0001	
		<u>  9</u>	묎	<u>=</u>	δ.	<u> </u>	유입		DESCRIPTION	oBow elighthy	+	
			42	0.0	BG-9 0.0-0.5			(0-32") SAND, medium to comoist, loose.	arse granied, brown, ngint ye	sion, signity	s	
						l						
										14		
-				0.0		-						
-					N	-						
					BG-9 1.5-2.0							
2_				0.0		2_						
						-						
							7////	(32-42") silty CLAY, brown, li	ght yellow, slightly moist, lo	ose.	٦	
		1			_							
71				0.0	BG-9 3.0-3.5	1						
				0.0	3.0-3.5	<b>√</b>						
-	5.6					] ]						
						1						
4-		-				"-		Bottom of boring @ 4 feet.				
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					48							
		_		L				LECEND	Materia evel ATD		bgi Ş	
NDERSON -	MULHOLLAND &	ASS	SOC	IATE	S, INC. sultants	_	0	<u>LEGEND</u>	Water Level ATD		ogr 4 bgl 3	
	110	) Coi	rpora	ite Pa	rk Drive		Sample	e Interval	Water Level Notes:	πι	oyı -	
A B 4		/hite			/ 10604 51-0400							
$\Delta  V $	IAI -	FA			51-0400							